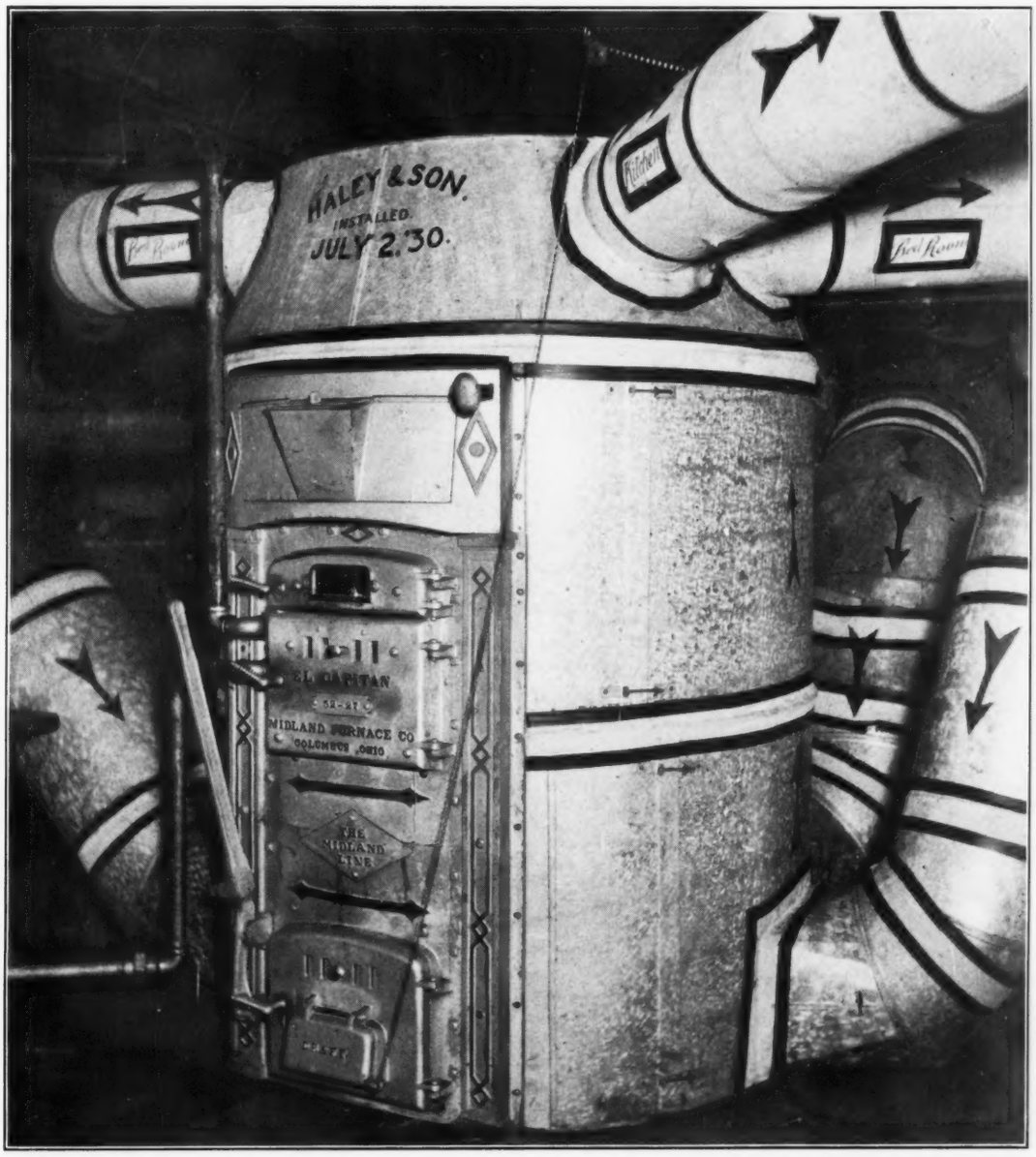
American Artisan

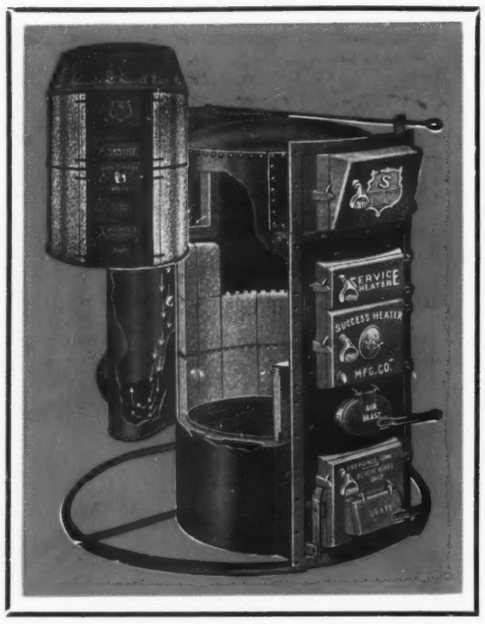
THE WARM AIR HEATING AND SHEET METAL JOURNAL

FOUNDED 1880



The contractor who installed this interesting plant marks all his jobs just like this. His purpose is so that every fellow townsman will recognize his work. The plan has proven a good advertising and sales aid.

NOVEMBER 22, 1930



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WHEN you sell a quality heating installation you've got to sell quality heating equipment with it. The day of selling any kind of furnace is rapidly passing—heating efficiency is what home owners demand now.

But when home owners become interested in quality heating installations they naturally seek a heating contractor who not only has a reputation for designing an efficient heating and air conditioning system but one who sells a furnace with a wide reputation for SUCCESS.

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The "Big Success Idea" is a tried and proved sales plan that will help you to land your share of the profitable quality jobs.

Write for details of the "Big Success Idea" Today

SUCCESS HEATER MANUFACTURING CO.
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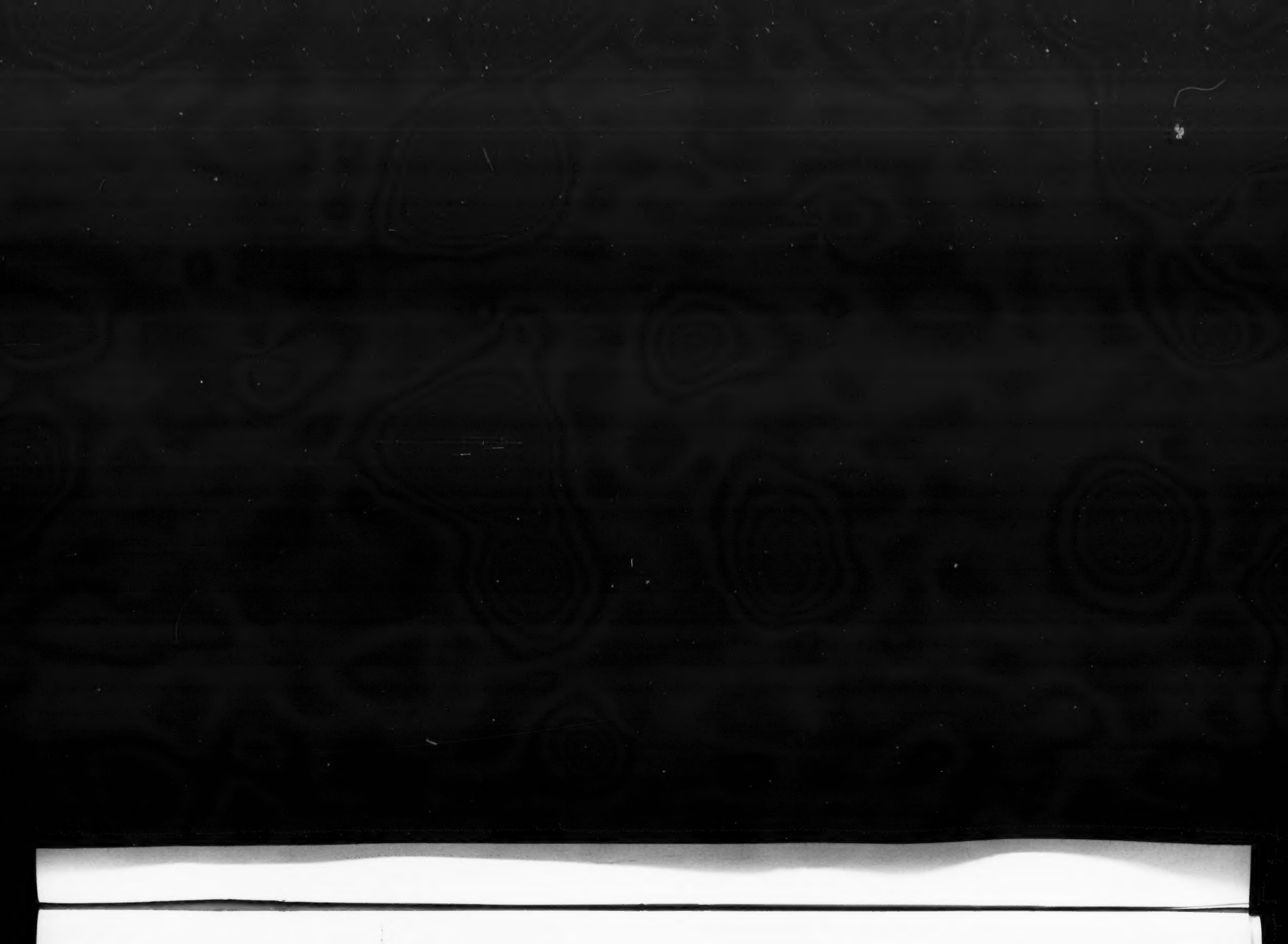
SUCCESS HEATERS



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Taunton-New Bedford *Copper Co., Taunton, Mass.* **Rome** *Brass & Copper Co., Rome, N. Y.*

GENERAL OFFICES: ROME, N. Y.

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INDEX PAGES—12 and 64 **[VOL. 99, NO. 24—$2.00 PER YEAR]** **BUYERS' DIRECTORY—60 and 62**

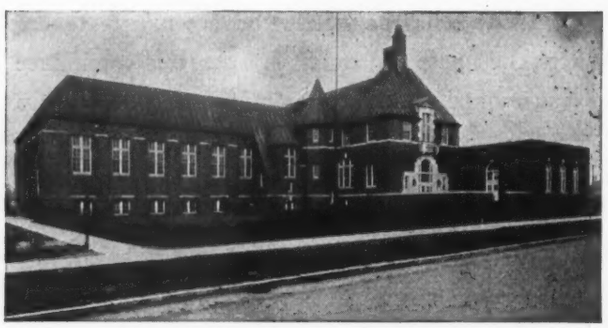
"There are several reasons why we prefer ANACONDA COPPER"

writes the ROBERT CANDLER COMPANY, *Detroit, Mich.*

TO be widely used, manufactured articles must serve a worthwhile purpose... must be of guaranteed quality... and must be easy to obtain at fair prices. Any one of these factors may become of first importance to some particular buyer. Almost every sheet metal contractor, for instance, has a definite reason for preferring to use Anaconda Copper. Mr. Robert Candler has several:

"There are several reasons why I prefer Anaconda Copper. I can get any amount of it on a minute's notice from my supply house. It always comes to me flat, well squared, clean, and evenly tempered. Because of those qualities it forms up easier in the brake. And an Anaconda Copper job, done with our skilled workmanship, is always a good advertisement for our firm."

The large, modern shop of the Robert Candler Co., Detroit.



A Candler job—the St. Clair Community Center, Detroit. The roof, standing seam type, was made of Anaconda Copper. Metal was supplied by J. M. & L. A. Osborn Co., Anaconda Distributors.

Mr. Candler's preference for Anaconda is well founded. The "evenly tempered — flat, accurately gauged sheets" are direct results of more than a century's experience in the production of Copper, Brass and Bronze. Great care with each process, from mine to finished product, produces this uniform quality and workability. Stocks of trade-marked sheets, rolls and "Economy" strips, maintained by leading distributors in all parts of the country, assure prompt delivery. The American Brass Company, General Offices: Waterbury, Connecticut.

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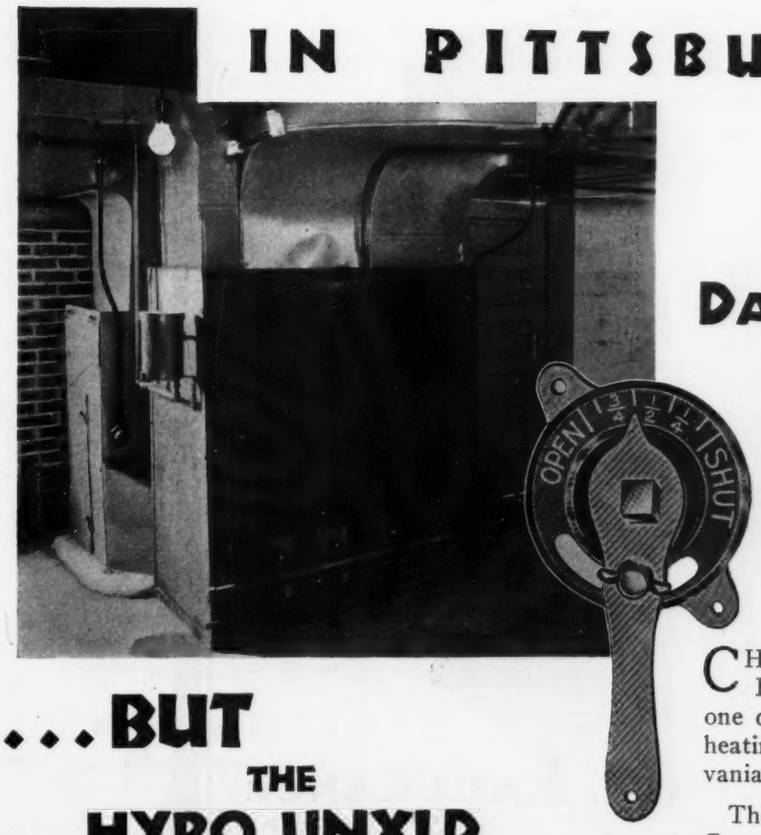
from mine to consumer

Sheet Metal Work of ANACONDA COPPER

Look for the name ANACONDA in every sheet and strip. Leading Supply Houses carry it.

Mention AMERICAN ARTISAN in your reply—Thank you!

IN PITTSBURGH—



THE HYRO DIAL DAMPER REGULATOR GUARDS MANY FINE WARM-AIR HEATING JOBS . . .

CHECK off the HYRO DIAL DAMPER REGULATORS in this picture! It shows one of the finest and most modern warm-air heating installations in Pittsburgh, Pennsylvania.

This job was done by the Schwartz Furnace Company of that city for a new two-story residence. It consists of a thermostatically controlled, gas-fired Bryant furnace with a 1000 Miles fan and four Reed Filters.

This job is an inspiration. It should warm the heart of every sheet metal man as well as the bodies of his customers. The use of HYRO DIAL DAMPER REGULATORS is typical of its high quality.

For the HYRO DIAL DAMPER REGULATOR is excellent for small and medium-sized heating and ventilating jobs. It doesn't take up much space, yet gives positive control and indication. Both in installation and operation it is extremely simple. It's made in one size only and if you care to have prices on it, just send in the coupon below—today!

This is the Hyro Dial Damper Regulator, Patented December 9, 1919, No. 1,324,620

. . . BUT THE HYRO UNXLD DAMPER QUADRANT IS STILL THE MOST POPULAR OF ALL

Patented December 23, 1919, No. 1,326,096

The HYRO DIAL DAMPER REGULATOR is a fine piece of work, to be sure. After all, it is made by Hyro. But for all-around use on heating and ventilating jobs of any size nothing can touch the one and original HYRO UNXLD DAMPER QUADRANT.

This is the damper quadrant heating and ventilating men everywhere prefer because of its reliable and lasting qualities, because it goes on curved surfaces as well as on flat ones, because it takes care of the biggest as well as of the smallest job and because it is locked easily in any position. If you want information about sizes and prices just send the coupon at the right—today!

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11-30

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Mention AMERICAN ARTISAN in your reply—Thank you!

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By steady service, year after year, and no end of refueling contacts, with only the satisfaction of home owners for applause, the Western is continuously breaking records in this most practical endurance contest.

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2 AUTOMATIC OIL-BURNER

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3 FORCED AIR BLOWER

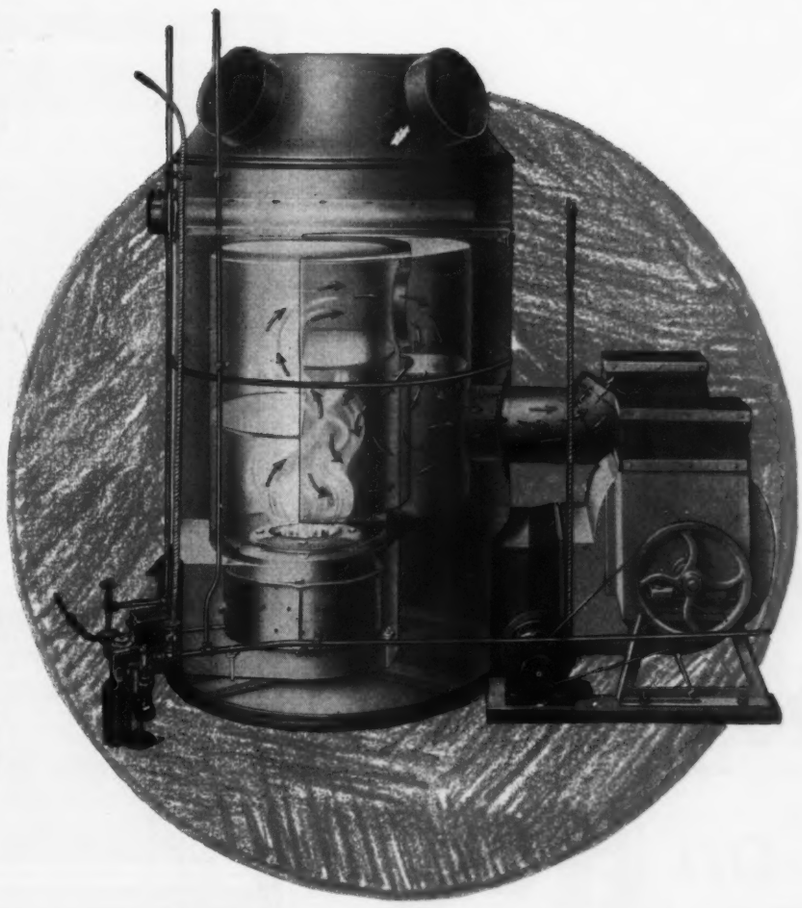
Carries a current of warm air into every corner in Winter, stirs up cool air currents in the hot months of Summer.

4 HUMIDIFIER

Keeps the air properly moistened for health as well as warmth; protects furniture.

5 THERMOSTAT

Accepted type of Thermostat, automatic in action, thoroughly reliable.



ALL IN ONE UNIT

All for the price of a good Oil-Burner alone

Sheet Metal Men, here is your chance to build immediate and permanent profits with this revolutionary new heating plant—the heating sensation of the century.

The various parts are not in any sense attachments but the whole scientifically designed and built as a complete heating unit. Each part is calculated with precision to work perfectly in relation to the complete assembled plant. Smaller heat-conductor pipes may be used with a resulting gain in headroom. The furnace need not occupy the middle of the cellar and thereby additional space is readily made available.

An air circulating blower keeps a flow of warm, moist air circulating through all registers and all corners in the wintertime. It can be used to circulate air in the summer. The Piatt is considered the heating sensation of the century. Examine its construction closely, send for complete technical data which will be gladly furnished.

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DOMESTIC UTILITIES

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Heater Division Dept. 253 LANSING, MICHIGAN

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No. 150—A two-piece register and a popular member of the broad H&C line which contains a style and type of register best suited for every purpose.

For far more installers have standardized on this line than any other. More than 40% of all the registers sold in the United States during the past year were H & C registers.

Why? Certainly not because of price; for H & C registers cost neither less nor more than other makes.

The answer is simply this—In efficiency, sound construction, finished workmanship, exceptional attractiveness and protective packaging, H & C registers possess a number of superiorities that make selling easier and promote greater customer satisfaction. Moreover the wide range of the H & C line provides a type of register best suited for every purpose. Taken altogether these factors constitute a big advantage. And if you investigate, you, too, are bound to discover that it pays to standardize on the H & C line.

H&C

Most jobbers carry the line.

See it at your jobber or write for complete catalog.

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You can't make the money you deserve if you have just the ordinary run of furnace to sell, and have to work your head off finding prospects and closing sales. . . . With the Waterbury it's a different story. . . . This one-piece, seamless, all-steel furnace has exclusive advantages found in no other furnace. . . . These special features eliminate competition and make price a secondary consideration, so you don't have to cut your profits to make sales. . . . And the Waterbury Merchandising Sales Plan gets the business for you. . . . Investigate the Waterbury Franchise and you will see that it is a money-making proposition for you. Send coupon for complete information. . . .

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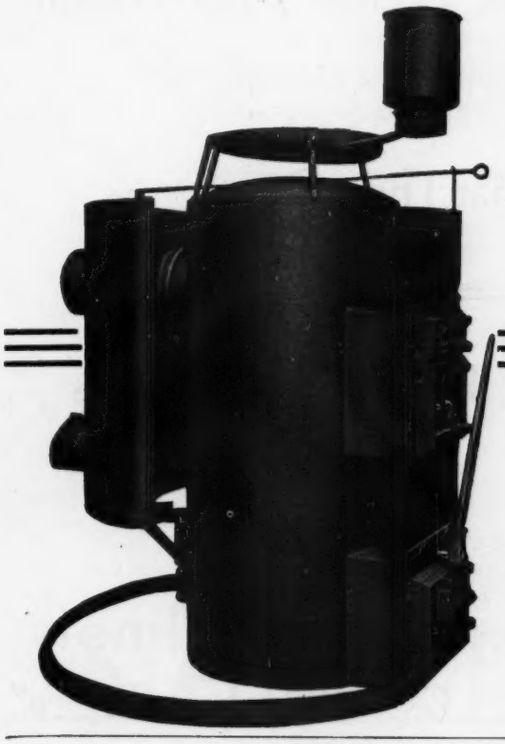

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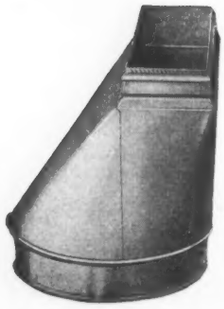
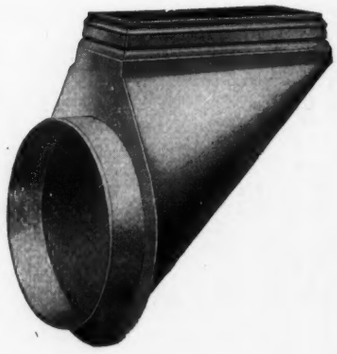


When More Furnace Dealers



Begin Selling The Fact That

"Next To The Walls And Roof, The Furnace Is The Most

Important Part Of The Home"

(And Installing Their Furnaces Accordingly)

Then There Will Begin To Exist A Greater Appreciation

For Furnaces—And What They Do.

And There Will Be More Profit For Furnace Dealers

F. MEYER & BRO. CO., Peoria, Illinois

"The Handy Pipe People Are A Mighty Good Bunch To Tie To"

100% SAFE

THERE IS ABSOLUTELY NO DANGER of the operator cutting himself with the Stanley - Unishear "Mighty Midget."

This safe construction is appreciated by users as is also the speed with which the "Mighty Midget" cuts sheet metal — an average of 15 feet per minute. With a minimum cutting radius of 1″, this tool will handle curves, angles or notches as easily as straight cuts.

Cutting blades are interchangeable and can be easily ground.

Capacity of the "Mighty Midget" is 18 U. S. gauge (.050″) sheet iron (other materials in proportion). It weighs only 6½ pounds and handles as easily as a pair of snips.

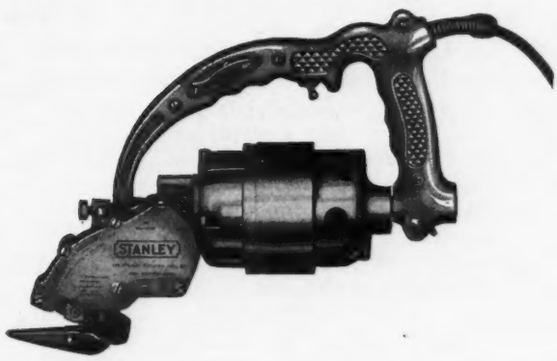
Don't waste time with antiquated hand equipment — a "Mighty Midget" will save time and labor.

Complete description upon request

The
STANLEY-UNISHEAR "MIGHTY MIDGET"

"The power driven hand shear"

Price 110 volt motor $75.00
220 volt motor 78.00



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Published Every Other Saturday

Covering All Activities
IN
Gravity Warm Air Heating
Forced Warm Air Heating
Sheet Metal Contracting
Air Conditioning
Industrial Roofing
Merchandising
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VOL. 99, NO. 24

NOVEMBER 22, 1930

A lot of you fellows will be interested in Platte Overton's school house story. Overton takes us behind the scenes and explains how the system is laid out. There are a lot of valuable pointers in this article.

* * *

One of the unusual stories is the G. I. Haley job on page 22. The way this company marks their jobs might not appeal to some home owners, but it certainly advertises this firm's work. That's what we need—more advertising.

* * *

G. A. Voorhees gives us another story, this time on "Efficiency" and "Capacity." There's a lot of difference between these terms. If you don't really understand them, here's a splendid explanation.

* * *

Don't overlook the Troubleshooter article. It's one of the best problem stories of the year. Perhaps you will want to discuss these solutions. If so, hurry up.

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"How Much Do You Pay for Sheets?"

—In answer to this question would you say, "The market price"? If the market price were always the only cost, this world would be much safer for profits in the sheet metal trades.

The value of your time or that of your men must be added to the price of sheets whenever a job is held up on account of a delayed delivery. Nothing perhaps, will add more to this expense than the payroll of your shop—idle because the material failed to arrive.

You can avoid this added expense by ordering from Ryerson. Immediate shipment from the nearest of ten Ryerson Plants brings an order of sheets in plenty of time. And you are not only assured immediate shipment on sheets. There is also satisfaction in knowing that all your steel requirements can be ordered for delivery at the same time.

Ryerson Steel-Service is holding down the price of sheets, bars, structurals, rivets, welding rod, etc., by delivering this material on time to thousands of sheet metal shops throughout the country. They are paying the market price and no more. If you are not already using this service, try it for a reasonable period and note the saving.

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STEEL-SERVICE

AN OLD NAME IN A NEW FIELD....

Hart & Cooley, widely known for more than 30 years as manufacturers of the finest quality warm air registers now announce their entrance in the AUTOMATIC Heat Regulator field with the

H&C AUTOMATIC HEAT CONTROL

A FULLY AUTOMATIC, Electric Motor-Driven Furnace Regulator of unsurpassed efficiency. Priced well within the means of every home owner.

$45.00 LIST PRICE COMPLETE WITH ALL FITTINGS

TIME TESTED

The H & C Automatic HEAT CONTROL is not the brand new and untried experiment of a company new in the furnace regulator field. On the contrary, it is the product of an old established firm which has long specialized in the manufacture of automatic heat control equipment—the Barber-Colman Company of Rockford, Illinois. Its absolute dependability has been assured over a long period of development and soundly proven in actual use.

Introduced under the tradename BARCOL, a number of furnace dealers already have discovered that this device offers the ideal means of capitalizing *on the very definite demand existing* for a thoroughly reliable, fully automatic, electric-motor driven heat control *at a popular price.*

The H & C No. 1000 Automatic Heat Control, as it is now known, will continue to be built by Barber-Colman and will be backed by the reputations for finest quality products long enjoyed by both concerns. As sole distributors of this product the Hart & Cooley Manufacturing Company takes pride in offering to the trade an article which it is confident will prove exceedingly popular, and profitable for Dealer and Jobber alike.

Write NOW for details concerning this outstanding Automatic Heat Control.

HART & COOLEY MFG. CO.

***General Sales Office*—61 W. KINZIE ST., CHICAGO, ILL.**

American Artisan
THE WARM AIR HEATING AND SHEET METAL JOURNAL

Vol. 99 CHICAGO, NOVEMBER 22, 1930 No. 24

The 1931 Programs Look Good

AS this issue of AMERICAN ARTISAN goes to press, the first programs for the 1931 state and national conventions are coming in.

It is worth noting that the programs for next year show considerable enlargement in scope over those of past years. This would seem to indicate that the committees in charge of the programs are determined to give the attendance the very latest and best available.

Building a good program is a man's sized job. It is easy to get a lot of windy speakers on a program, but to get good speakers, who really have something to say, is difficult.

These men who know something are busy men. They must figure their time on a dollars and cents basis. For the most part they are willing to tell what they know, but they are not willing to sit around half a day waiting for some tiresome speaker to orate about something which has been discussed numerous times before.

We are at a crossroad of the warm air and sheet metal business. One branch leads us along a road which probably will be easy to travel, but it goes downhill. The other is a new trail. It requires road building for much of the distance. But the rewards at the end are almost unbelievable.

One of the surest ways to steer any industry along the right branch is to give members programs which start them thinking and planning and doing the things they have heard discussed at conventions.

It is notable that for next year the various conventions are going to devote a larger part of their programs to such things as Cost Accounting, Forced Air Heating, Heating Engineering, Advertising, Selling, and other phases of merchandising.

These are, in truth, the things our industry is going to have to know all about if the members are going to do a selling job during the next few years.

The way to start is to open the problems for discussion at the state and national conventions. Seemingly this is just what is going to be done.

More power to the builders of the programs—but let's all determine to attend and hear for ourselves.

Let's Not Lose Sight of the Fundamentals

WE have been hearing much this past year or two about the great advances being made in the knowledge of warm air heating. It is well that the industry, as a whole, is taking this attitude. General belief that our industry is awake and going places to do things is one of the best tonics available.

But it has seemed to us here of late that we are overlooking one important thing.

That is that many, many of the things now heralded as new are in reality as old as the industry. What we are overlooking, and should not overlook, is that we must not lose sight of fundamentals.

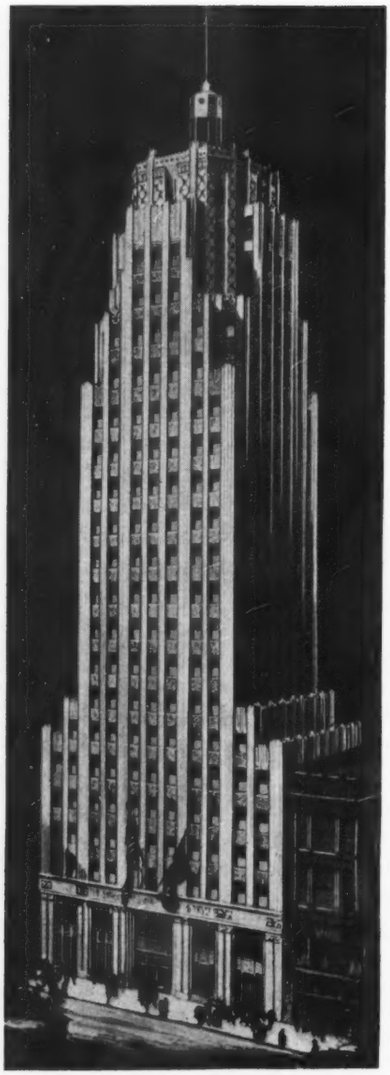
This situation can be illustrated by typical examples. Not many weeks ago a contractor told us that the new idea of placing warm air registers in the side wall and the ceiling was one of the best things to come out of research. Now any old timer can tell us of jobs he put in twenty, thirty and more years ago where the registers were in the side wall or the ceiling.

In this case the contractor lost sight of fundamentals.

Here's another. A contractor was having trouble heating a house. The furnace got very hot while the upstairs remained cool. He installed a fan, but it did no good. An old timer told him the trouble was a shortage of return air. How did he know? He felt the base ring and found it hot. That proved to him, that there wasn't enough air passing through the casing to keep the furnace cool.

Here again the contractor turned to the new, but overlooked the old and the new wouldn't work.

We might cite many other such incidents. What they prove is that though the industry goes a long way it can't get away from the fundamentals.



Four hundred and eighty-six aluminum spandrels are used on the Lincoln National Bank, Ft. Wayne, Ind.

Sheet Aluminum Spandrels Play Important Role on the Lincoln Bank, Ft. Wayne

ONE of the most interesting trends in architectural design during recent months is the widespread adoption of metal to lighten the weight of large buildings.

This movement to lighten weight began several years ago when lighter floors and partitions, lighter materials and structural elements came into use. The movement has also resulted in very general search for new ways of using old materials.

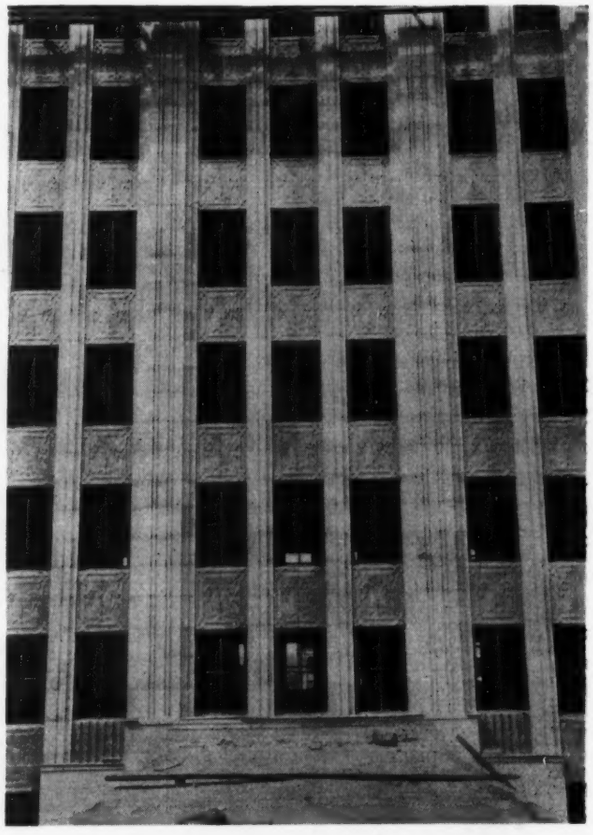
From the sheet metal industry's point of view, the most important result of this movement is the increased use of metals on exterior walls and for adornment.

One of the first uses of metal was the adoption of the metal spandrel. This use of the metal spandrel really got under way when the Tribune Tower in Chicago was designed to use hard lead spandrels. This famous structure was heralded all over the world—first as a competitive architectural prize and then later as one of this generation's outstanding buildings.

Use on the Tribune Tower was rapidly followed by adoption of metal on many other buildings all over the country. Today metal spandrels are enthusiastically used by architects to the general profit of the sheet metal industry.

One of the most interesting recent jobs using metal spandrels, is the just completed Lincoln National Bank in Fort Wayne, Indiana. This handsome bank building of 22 stories towers above all the other buildings in the downtown district. It is a tower-shaped building with all four sides finished.

The feature of the exterior is the use of 486 formed sheet aluminum spandrels. One spandrel is placed under each exterior window on all four sides. Forming these span-



This is the rear elevation. Every window has its spandrel. All spandrels are identical in size and design. The spandrels extend from the top of one sash to the bottom of the next above

Closeup of the spandrel face. Each face is composed of two sections. The seam runs up and down the center and is lapped and spot welded

The back side. The edges of the center seam were turned in against the angle and held by a spot welded clip. The outside edges were turned over the angles and pounded tight

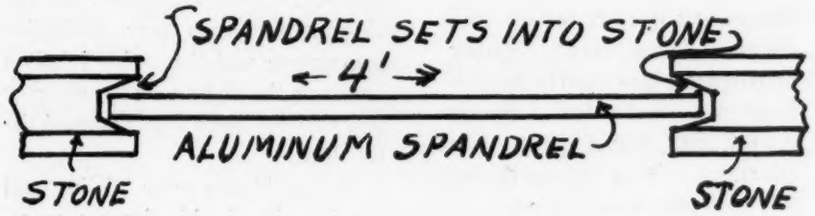
drels and placing them in the wall kept the sheet metal contractor busy for many weeks.

The photograph shows the full front of the building. Other pictures show the formation of the spandrels and the drawings show how the units are supported in the wall.

The contractor who put these spandrels together and placed them in the wall is the C. L. Schust Company of Fort Wayne. This contractor has one of the largest sheet metal shops in Indiana. In enlarging his quarters recently he bought an entire factory building on the edge of the city and moved in. He uses a two-story adjoining building as an office and uses the entire first floor of the big factory as a shop.

The other floors are used for storage or are rented out. The Schust company's principal line of activity is ventilation. Fort Wayne is a busy manufacturing city and nearly every factory in the city shows evidence of the ventilating activity of this firm.

C. L. Schust is a young man. He is not a sheet metal man by right of being born in a sheet metal family, but entered the field as a business proposition. While his active participation in sheet metal has covered only the last few years, his belief is that sheet metal work can be carried on just like any other business and that the active head of a business can progress better if he is a good manager and business man rather than a skilled sheet metal mechanic.



The spandrel slides in grooves in the masonry mullions as shown in the diagram

The formation of the spandrels is interesting. The metal used was 16 gauge, which in aluminum is light. Each spandrel measures 4 feet wide by 4 feet 6 inches high. The spandrel is formed of aluminum sheet welded onto an angle iron frame. The design embossed on the sheet is such that each up and down half of the face is like the other half. The spandrel was so large that it was not possible to emboss the face in one stamping operation. The spandrel is, therefore, built up of two identical halves. The inside edges of the halves are not alike since one side is turned into the back of the spandrel, while the edge of the other half is formed to make a lap joint.

All the halves were stamped in the plant of the Friedley-Voshardt Company of Chicago. The stamped

Windows and spandrels alternate up the entire height of the building. Between windows are masonry mullions, full building high

halves were shipped to the Schust company shop where the halves were put together and placed on the frame.

It is not practical to solder aluminum, so all the halves had to be welded together and also welded to the frame.

Each half, as formed by Friedley-Voshardt, had a surplus of metal along the inside edge of the half-panel. When the contractor got the halves he turned a flat reverse on one half edge to lap over the edge of the adjoining half. This made a flat, lapped seam down the center of the spandrel face. The remainder of both the wide edges was then turned into the back of the spandrel right alongside the center angle iron brace. Clips were then spot welded to the turned edge and bent around the angle iron and again spot welded. This held the lapped seam to the metal frame.

It was then necessary to join the lapped seam together and here again spot welding was used. The lapped seam was spot welded at close intervals all down the length of the seam.

The surplus edge around the three outside edges of the spandrel was then turned over the angle iron frame and pounded tight. This procedure locked all outside edges to the frame while the welded clips down the center seam held the center part of the spandrel to the frame. This gave a spandrel which while very light in weight, was rigid due to its tight joining to the stiffening frame.

This operation of spot welding proved to be quite difficult since the sheets are light and too intense a flame burned a hole right through the sheet. All such holes or globs of melted metal were unsightly and spoiled the appearance of the face of the spandrel. While the most careful attention to the welding was insisted on, some of the welds got away and became rough. This necessitated some buffing and soft hammering to eliminate the bad welds.

The finished panels are very attractive and the soft color of the aluminum gives a distinctive coloring to the building.

As rapidly as the exterior walls were built up the contractor delivered spandrels to the job. One of the details shows how the spandrels are supported in the face of the wall. Since the spandrel is light enough for one man to pick up and carry, the placing of the units was not difficult. Each unit slides in a pair of grooves in the stone mullions of the face of the building. One of the details shows this. The stone work was placed first, of course, and as rapidly as one stone frame was finished, the spandrel was slipped into place and the wall was ready for backup. On this building the exterior wall was further lightened by the use of cinder concrete block for the backup.

The spandrels were calked into the stone work to prevent entrance of moisture.

The appearance of the completed building is most attractive. The spandrels begin at the fifth floor level and run up to the top of the building. The soft color of the aluminum gives a very distinctive appearance and the entire job is a credit to the sheet metal contractor and the architects who designed the building.

The architects were Walker and Weeks with A. M. Strauss representing them as local architect.

Architecture is right in a severe stage of growing pains. The architect is looking for new materials to use in expressing his ideas. Perhaps even more important, those who are financing construction are demanding that lighter buildings, less costly buildings, be perfected. Sheet metal fits right into this picture. You should be getting your share

OVERHEAD

"I Still Think It Should Be Figured On Labor And Materials"

JOSEPH G. DINGLE

IN the September 27th issue of the ARTISAN was an article dealing with the application of OVERHEAD on MATERIAL AND LABOR. In the October 11th issue is an interesting article by Benjamin F. John on the application of Overhead on PRODUCTIVE LABOR ONLY. Both articles go into a great deal of detail, for the purpose of bringing out the relative merits of the two methods. It is hoped that the readers of the ARTISAN will follow this discussion closely and that we may have some comment on the subject from Warm Air Heating men. What is the best practice in this industry?

After thoroughly digesting Mr. John's very interesting article on the application of Overhead on Productive Labor Only, I wish to say that I am still in favor of loading Overhead on Material and Labor. I shall try to show you that while either method can be used, there are reasons why one method is more accurate than the other.

In the first place, I wish to call attention to the fact that I am addressing my remarks to the AVERAGE SHEET METAL SHOP, not to some highly specialized individual shop doing a particular kind of work. The average Sheet Metal Shop will do all kinds of work, including the installation of Warm Air Heating Plants, tin roofs, metal cornices, metal ceilings, guttering and a thousand and one other jobs, including repair jobs. Such a shop will not be a highly organized business unit, with a large executive staff. It will more likely be an individually owned business, the owner attending to the sales and buying, doing some of the so-

Joseph G. Dingle, C. P. A.

called productive, or direct, labor, himself. He will have an office girl, who attends to the phone and keeps such books and records as are kept.

That's a picture of the fellow I am talking to and about.

In previous articles, we have gone into the detailed discussion of just what Overhead *is*. We now want to know *HOW TO APPLY* Overhead so the customer will pay his share of these indirect costs—But No *MORE* Than His Share. We must admit that while we own the shop, it is worthless without customers. And to have the most satisfied customers is tshe aim of every business man.

What does the Average Sheet Metal Shop sell? We will agree that the answer to this question is MATERIAL, LABOR, AND OVERHEAD. Of course, we know that by a wise combination of these three elements, we bring into the sale that universal commodity, SERVICE. Proceeding now on the theory that we sell Material, Labor and Overhead, we come down to the concrete proposition of a specific job, for a certain person.

We are asked to quote a price on a furnace job.

What is your procedure?

How do you go about building up your price?

Why, you measure up that house by the rules laid down in the Standard Code. You then build up, piece by piece, the MATERIAL required. This material list is priced *At Cost*. You then build up the labor required to do this work, also *AT COST*.

So far, so good.

You know that this job must be charged with some OVERHEAD —that is to say, this furnace job must carry its share of your rent, lights, delivery truck, office girl's salary, and many other items of expense incidental to your business.

How do you handle this OVERHEAD? Do you say your rent is $50.00 per month and as it will take a week to do this job it should be charged with $12.50 rent. Of course not, for you are doing other work which is getting some benefit from that rent. Why, you may even be booking, during that same week, work costing several thousands of dollars, and that new order came to you because you were in business. It is, then, a physical impossibility to determine the indirect expense incidental to any specific job. These indirect expenses are incurred for the purpose of getting expected business as well as executing the jobs actually secured.

Your office boy today is engaged in collecting for work done last week, or last year; also in doing work on certain jobs today; and in bidding on jobs you hope to do next week. In other words, your indirect expenses (OVERHEAD) concern *PAST, PRESENT* AND *FUTURE* business. The advertisement you have in today's paper may bring you some business tomorrow or next month. Who can tell what results may come from that overhead expenditure?

But let's get back to that Estimate. How to apply that Overhead so our customer pays his share of the cost? We are agreed that practically every job uses some material and some labor. One job will be a furnace installation, calling for more material than labor. Another job will be a repair job—calling for but little material but quite a bit of labor. We know that from our prior years' experience we have done so much business; we know also that our Overhead has averaged so many thousands of dollars. We also know that during prior years, we used so much material and so much labor. We then say that from our prior experience we used, say, $5,500.00 of Material and $5,500.00 of Labor and our Overhead was $5,500.00. On this premise we can build up our guess as to the future. We used $11,000.00 of Material and Labor and had $5,500.00 of Overhead. It is quite clear that our overhead was equal to 50 per cent of our Material and Labor costs. It is also quite clear that our overhead was equal to 100 per cent of either our Material Costs or our Labor Costs.

These figures are, MIND YOU, the aggregate figures for a whole year—and are made up of all those jobs you did during the year. In these figures are those furnace installations where you used more material than labor; that job where you sold some galvanized iron sheets without a cent's worth of productive labor, and quite a few furnace repair jobs where it was practically all labor. If you care to, you can say that during 1929, your material, your labor and your overhead amounted to $5,500.00 each; therefore 100 per cent of material, or 100 per cent of labor will cover your overhead charge.

That is true for 1929—but we are now in 1930. Are you sure your 1930 business is going to require as much material as labor. Do all your prior years show material equal to labor? I am sure they do not. Let's suppose, then, that we proceed on this theory—that we are going to sell materials AND labor costing $11,000.00 and that our Overhead will be $5,500.00.

This discussion on where to figure Overhead is coming to a close. If you want to add anything to the argument, send it in now. This is the last call!

We have had some very interesting articles, but there must be a lot more to be said, especially from you fellows who have been or are now going through the mill of figuring costs. We would like to get your side of the story.

By so stating the case, we eliminate the question of varying material and labor content in our sales.

If we sell a material bill, or if we sell a repair job, we will add to our MATERIAL and LABOR costs, as built up in our estimate 50 per cent of that cost for Overhead, and then add our profit. Regardless of what the customer buys, he pays his full share of our rent, office girl's salary, advertising, truck expense and all those indirect expenses incurred in order that we might be ready to serve him—regardless of the fact that he may require only labor, only material, or a combination of both.

Then, there is another side to this case. Let's assume that you pay your men $1.00 per hour and that your overhead is, say, 100 per cent of labor. When applied on Labor Only, Overhead will average *MORE THAN 100 PER CENT,* but we will use 100 per cent for this argument. You must, then, charge your customer $2.00 per hour to cover labor cost and overhead and if you add 10 per cent for profit (small enough) your selling price of labor is $2.20 and your customer will not pay that price. It is too high. He does not know that he is getting his material at practically wholesale price but he does know that $2.20 is too much to pay for a tinner.

If you load your overhead on Material and Labor, and, as illustrated above, your rate is 50 per cent of Material and Labor, your customer pays $1.65 per hour $1.00 cost plus 50 per cent Overhead, plus 10 per cent profit) and your material price includes 50 per cent of its cost for Overhead, plus 10 per cent profit) and your material price includes 50 per cent of its cost for Overhead and the 10 per cent profit. Regardless of the class of job your customer has he pays his share of the Overhead.

Mr. John states that fractions are the Sheet Metal Man's Bug-a-boo. I am afraid that statement is only too true. From the figures given in his article it is quite apparent that there has been but little profit realized in those shops. They have apparently avoided the use of fractions and failed to charge enough overhead. They may have fallen into the habit of saying that 100 per cent of labor WILL COVER OVERHEAD. In five cases out of the ten the overhead exceeded 100 per cent of Labor, the highest being 143.73 per cent and the lowest being 115.94 per cent. Of the five cases where Overhead was less than 100 per cent of labor and the lowest was 87.74 per cent and the highest 96.64 per cent. The ten cases, then, ranged from a low of 87.74 per cent to a high of 143.73 per cent of Direct Labor for Overhead cost. These figures prove very conclusively that while frac-

tions may be a bug-a-boo, in each of the ten shops referred to, their actual overhead was some fraction.

It might be said that, for convenience, and to avoid fractions we discontinue the use of cents—using only dollars. Cents, nickels, dimes, quarters and half-dollars are all fractions of a dollar and I am sure no business man would seriously consider discontinuing the use of these "fractions" in his business.

There is another side to this matter. Each years' business activities vary materially from the others. There is a constant fluctuation in the volume of business done. Overhead increases or decreases—both in total dollar cost and in its relation to Sales Volume. It is necessary that the business man constantly watch his business activities in order that he may be sure his costs are being properly charged. In planning the coming year's program, we use the results accomplished in prior years, and *ESTIMATE* the future business. Suppose, for instance, that we have averaged $15,000.00 sales for the past three years. That permits us to predict that we may reasonably expect $15,000.00 sales for 1930. But it does not *GUARANTEE* that volume. If we find our sales falling off it naturally follows that we must change our overhead percentage to take care of the decreased volume. If we planned to absorb $5,000.00 of Overhead in $15,000.00 worth of Material and Labor, and we find we are not going to use more than $10,000.00 worth, we will, unless we change our rate of Overhead, only charge our customers with two-thirds of $5,000.00 and we will have to absorb the other one-third. On the other hand, if we find our sales are going to exceed our predicted volume, we will have made provision for more Overhead than we actually had. No matter what method we use for loading our overhead, we must constantly watch the business to see that our predicted results are being realized or change our figures of cost to compensate for the decreased or increased volume.

Here let me suggest that you read again my article on Estimates, published in the June 21st issue of the ARTISAN.

In a later article, I will use some of the figures from Mr. John's article in an effort to show you the actual conditions in a shop over a period of three years. You will recall that in his Table 1 the first three sets of figures represent three years' operations of a shop. In using these figures, I can bring home to you in a concrete way the necessity for changing your sights after each shot, or adjustment of your basis of pricing estimates as the year progresses.

Mr. Dingle Answers Some Queries

Question: What good will a set of books like that do me with my banker?

Answer: Try it and see. Your banker wants you to succeed. He also wants you to repay any money you borrow. He knows that a good set of records covering your business operations will make you a safer risk to his bank; will make you a more successful business man, and be a good example for your fellow business men. Just ask your banker what he thinks of a good set of cost records for your business.

Question: Suppose I know my costs and figure my estimates accordingly. What good will it do me when my competitor under bids me?

Answer: You, of course, cannot control your competitor's price. If he guesses at his costs, and you absolutely know yours, he will at times be too high and at others too low. He may in time wake up. Again, knowing your costs quite frequently will help you convince a customer that the job is really worth the price you are asking. That happened in a sheet metal shop just recently. The proprietor sold the prospect the job at a price higher than a competitor quoted and in addition sold the customer the idea that the higher bidder KNEW HIS COSTS.

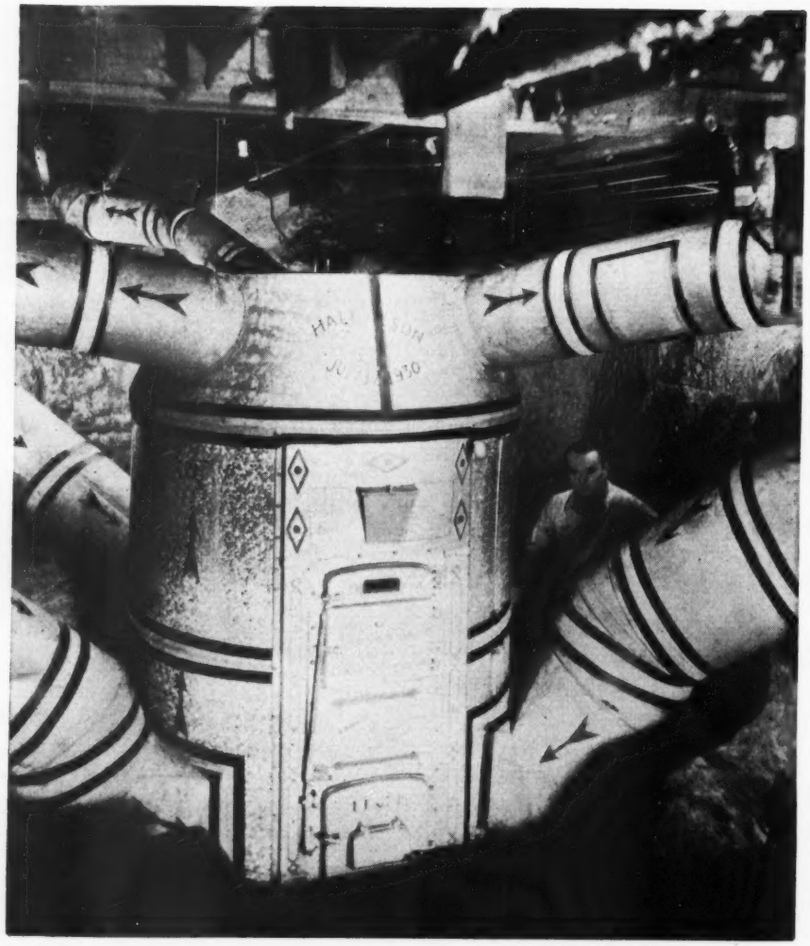
Question: I have a small shop, and the girl in my office is not a full-fledged bookkeeper. Could she be taught to keep such a set of books?

Answer: Certainly. She probably knows a great deal of the routine of your shop and this is quite valuable training for a bookkeeper. Ask her to read the series of articles carefully and to write us for explanation of any points she does not understand. With a little direct correspondence, we believe we can help her to see how simple bookkeeping is.

Question: Having followed the series on Cost Accounting I am sold on the idea. How could I get the necessary books and forms and install such a record in my shop? Would it be very expensive?

Answer: We can furnish the necessary books and supplies. Shops in northern Illinois could have these records installed at a cost ranging from $100.00 to $200.00, depending on your location.

Did you ever walk down the street and look at all the flat buildings and wish you could just break into that field with your furnaces? Well, it can done. We've got a dandy story on the selling and installing of an eight-flat building. It probably will be published next issue. Watch for it.



These painted arrows show how the air travels through the heating system. Even a layman could figure out this movement. The joint wrappings are asbestos paper painted on the edges

Haley & Son So That

THE pictures which accompany this article are undoubtedly going to attract the eyes of a lot of you readers. Especially the pictures of the furnaces. These gaily decorated heating plants are not for demonstration purposes, nor are they for some display window, but are actual examples of how one warm air heating contractor marks his installations so that any person seeing one of these heaters knows immediately who did the job.

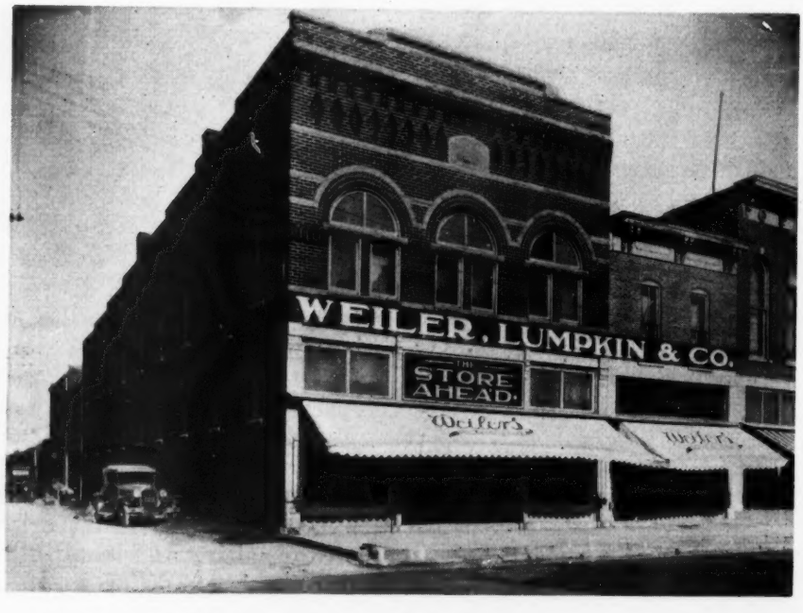
These unusual markings also make it possible for the owner of the plant to know just how the air within the plan is moving. By knowing all about this movement he can adjust his pipe dampers to control the amount of heat the various registers are getting.

Another feature of these markings is the mental effect of the striped joint wrappings and the painted arrows. These markings make the system look as though there was something to a warm air heating plant besides a closed in stove and a few feet of pipe in the basement. The arrows show that within the pipes and furnace, air is moving along defined paths. This air is following definite laws of nature and unless the system adopts itself to these laws the heating system is not going to work.

This plan of designating and making the furnace system sell itself was thought out and is now used by G. I. Haley and Son of Dunkirk, Indiana.

The striped bands around the joints are made of asbestos paper with the two edges painted black. The arrows are painted on the pipe.

All the pictures shown are not from one job. The large furnace set in a pit heats the store building shown. The heating layout is also for this building. This is one of



This is the exterior of the store and annex

Mark Their Jobs
Every Townsman Knows Their Work

the installations recently completed by this contractor. There are several interesting features to this job.

The store is quite an extensive establishment. There is an annex alongside the main store and this, too, is heated by the furnace. In addition to these two spaces on the first floor heat is also supplied to the second floor. This second floor is only heated to a temperature between 60 and 65 degrees. About all that was wanted was enough heat to prevent dampness.

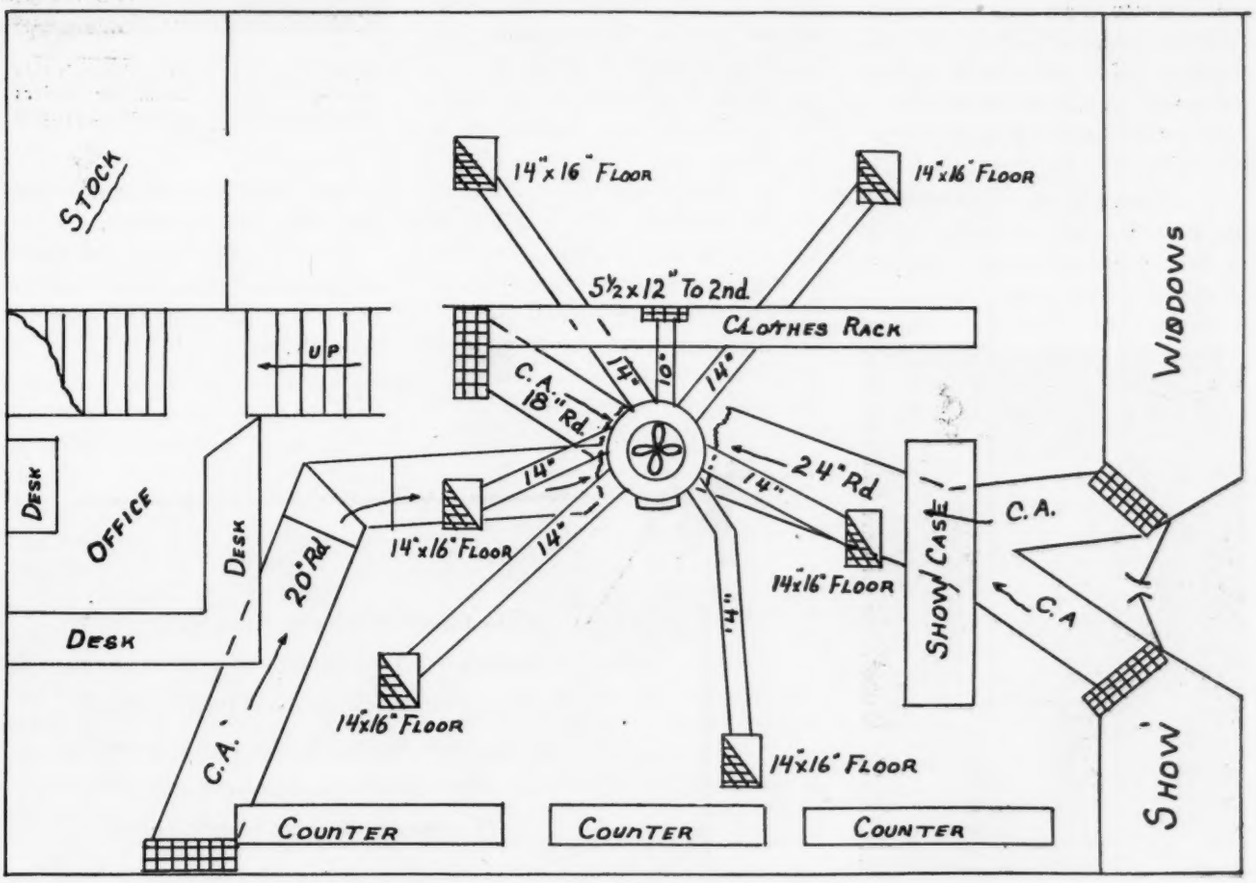
The layout shows a compact system with a fan housed in the bonnet of the furnace. The furnace is a Midland El Capitan using coal as fuel.

There are seven warm air leaders off the furnace. Six of these feed floor registers in the first floor and one connects to a stock for the second floor. These leaders are spaced evenly around the bonnet and with the exception of the leader for the second floor are all 14-inch. The second floor leader is 10-inch.

All the return air to the furnace is taken from the first floor. Three main returns are provided, but one, leading to the front of the store has two branches connecting to a pair of floor grilles placed at each side of the main entrance.

This large return air duct takes care of the cold air brought into the store by the opening of the street door. By placing a large return air inlet at the door, much of the infiltration here is taken care of and the heating of the rest of the store interior is greatly simplified.

All three of these return air mains are of round pipe. The one



The heating plant layout for the store shows a nicely balanced system without any excessively long warm air runs and a well balanced return air system. The fan is located in the bonnet. Only one stack goes to the second floor since it was not necessary to put much heat up there. All warm and return air leads are round pipe

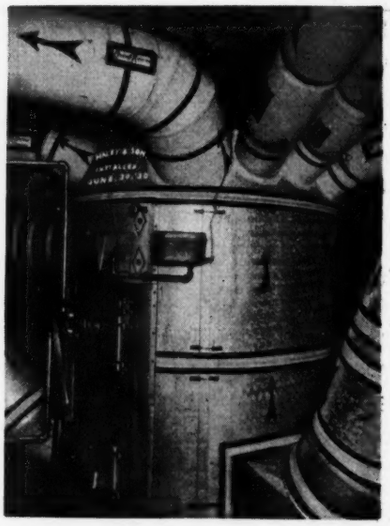
This is the interior of the main store. All warm air enters through floor registers placed in the best location possible considering tables, show cases, etc.

from the front is 24-inch, the one from the back of the store is 20-inch and the third from the partition is 18-inch. It will be noticed that the return air side of the system is considerably longer than the warm air side. As a matter of fact, the warm air side of the system is very compact considering the size of the building.

The placing of the floor registers has been worked out nicely to fit into the requirements for heat and the placing of various pieces of store equipment. One register is placed at the front of the store to heat the air not taken into the return air grille at the front door. Two other registers care for the north side of the store and a third is located approximately at the foot of the stairs. The other two are used for the men's wear department in the annex.

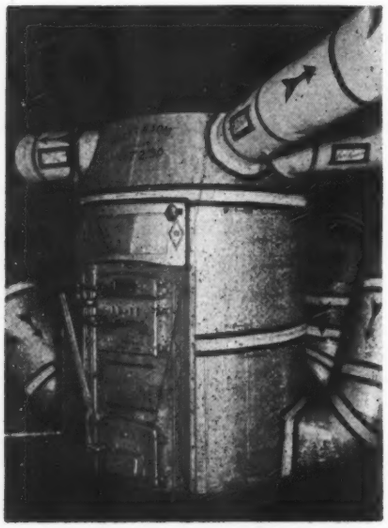
The furnace was placed in the pit for two purposes. The first was to get a drop on the return air side of the system and the second was to get head room above the bonnet.

Satisfactorily heating a store of this kind undoubtedly necessitated some thought as to where the registers and grilles could be placed to be most effective. Show cases, tables, racks and other pieces of equipment meant interference with natural air travel from register to grille. In addition, some locations which might have been better from a heating standpoint, were out of the question from a store efficiency viewpoint. The resulting compromise has proved effective.



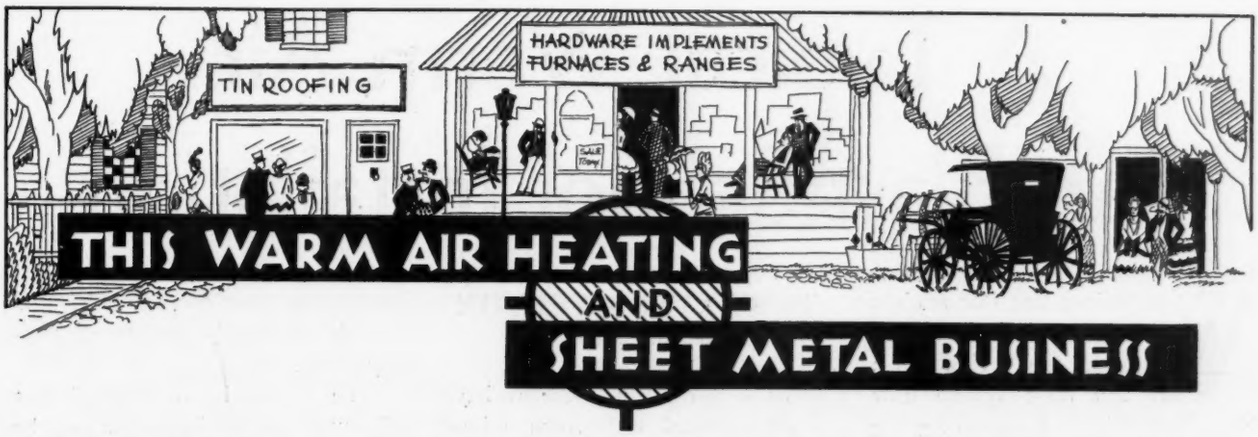
Identification is insured through this unusual marking. Even the leaders are designated by room with painted blocks

The two other furnaces shown are of other typical Haley and Son jobs. They are marked with the Haley symbols.



This is another of the Haley company's jobs. Notice how this is marked also

This story brings up an interesting question. How many of you readers use special colors of paint, markings like these, large name panels, or what not to designate your jobs? If you do, tell us about them



WHAT A GOOD SALESMAN KNOWS

By BENJAMIN F. JOHN

A GOOD furnace salesman has to know a lot of things.

The good salesman is the fellow who works day and night to help his dealers to build up their business. He is interested in their buying, their sales, their labor, their workmanship, their methods of doing business.

This being so, the salesman ought to know—

1. How to sell heating systems to the home owner.

2. How to install his product correctly.

3. To know all about his customer's business and be the dealer's business advisor.

There are such salesmen, but there ought to be more.

It must be perfectly plain to anyone who can read the signs of modern successful business methods, that the producer shall in some manner control the sales price. Those industries who have done this have prospered in spite of competition.

The salesman who knows how a system should be installed is in a class by himself, and is entitled to the best business. He has no fear when he is questioned by a contractor who has studied and installed a number of successful systems, but rather is in a position to interest the contractor much more easily. He can retell the result of research and improvement which he receives from the home office of the factory, and in turn receives information of a practical nature as experienced by the contractor. And a friendship founded on mutual respect begins.

Today, through the urging of the manufacturer, the dealer who is confronted with a heating system that is the least bit intricate, sends his problem to the home office, and a blue print is returned with instructions as to the proper installation. Many times, through no fault of the manufacturer, but rather because the contractor did not give all or proper information, the system does not work as expected.

Here is where the salesman's strong position is established. If he knows his stuff he can at once shift the change and improve the system, and usually make a firm friend of the contractor.

And again when a salesman obtains the confidence of his customer through such help, can he not know the business methods and prices obtained, and by suggestion and comparison help him?

Here's an example: A few years back a salesman came into town and visited a number of dealers, one of whom had a job and wanted a furnace. After the visit, in which he helped the dealer with suggestions, he received the order. The company refused to ship except C. O. D. The salesman was struck with the mechanical ability of the dealer, and sized up the situation and location and concluded that dealer could do more business, and it would be to his advantage to help him. He wired the company not to write the dealer, but to let him handle the matter.

With the dealer he received an order for the furnace from the owner; turned it over to the dealer's bank; obtained the money and shipped the furnace.

But that was not all.

During the transaction the salesman found out the dealer's sales price, and after doing some figuring soon realized the trouble with that dealer was he was not getting enough money for his jobs and did not know it. Knowing the average prices of other dealers in other towns, he suggested that it might be well to go over costs, and let him figre next job. To this the dealer agreed. The salesman figured the next job, and went with the dealer and helped him sell it; had the owner sign a contract, the first one the dealer ever issued, and in that contract the owner promised to pay a certain amount when the stacks and registers were in place, and this paid for the furnace, when ordered.

To raise the standard of the warm air heating business, the knowledge that now exists at the office of every furnace manufacturer must reach the dealer. It is for mutual benefit, and there is no better means than through the salesman on the ground.

A Typical Warm Air Fan Blast School Installation

By **PLATTE OVERTON**
Consulting Engineer

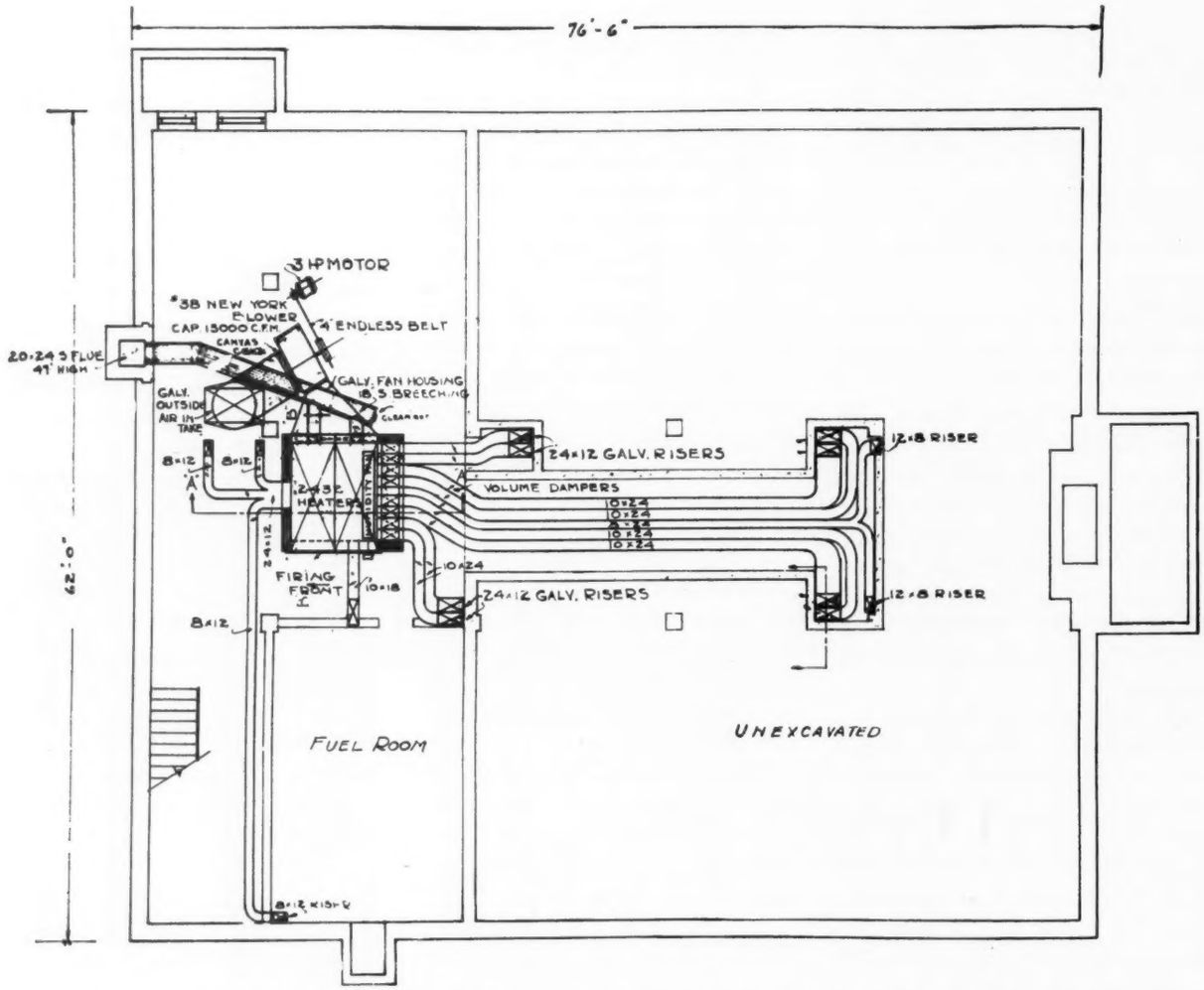
WE believe that our readers will be interested at this time in the review of a warm air fan blast system now being installed. At the date of going to press with this article the system is no doubt completed.

We will forego our usual technical discussion to give our readers the plans of a system of warm air heating and ventilating in an eight-room rural school near Flint, Michigan. This installation is neither elaborate nor costly. Here we have a conventional eight-room school with corridors, principal office, and boys' and girls' toilet rooms.

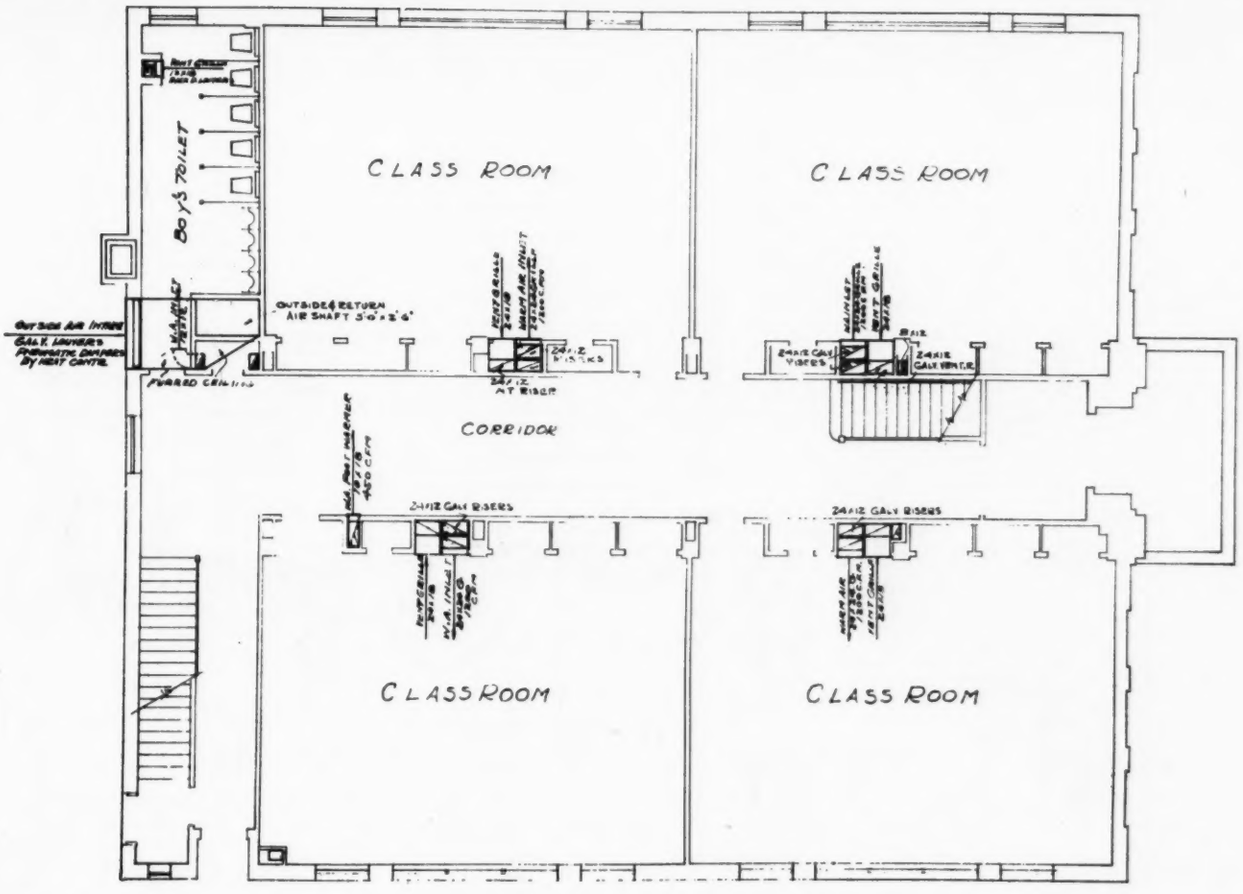
Only part of the basement is excavated and this part is for heater room and fuel storage. The basement also contains the water storage tanks. A trench 3 feet deep is run down the center of the building under the corridor, and in this trench are placed the warm air supply ducts.

The system is so designed that all outside or all inside air may be used for heating and ventilating. The outside air and return air so function that part outside and part inside air may be used.

The air from outside or inside, or both, is drawn down through the shaft. This shaft is connected to the intake side of the fan. The air

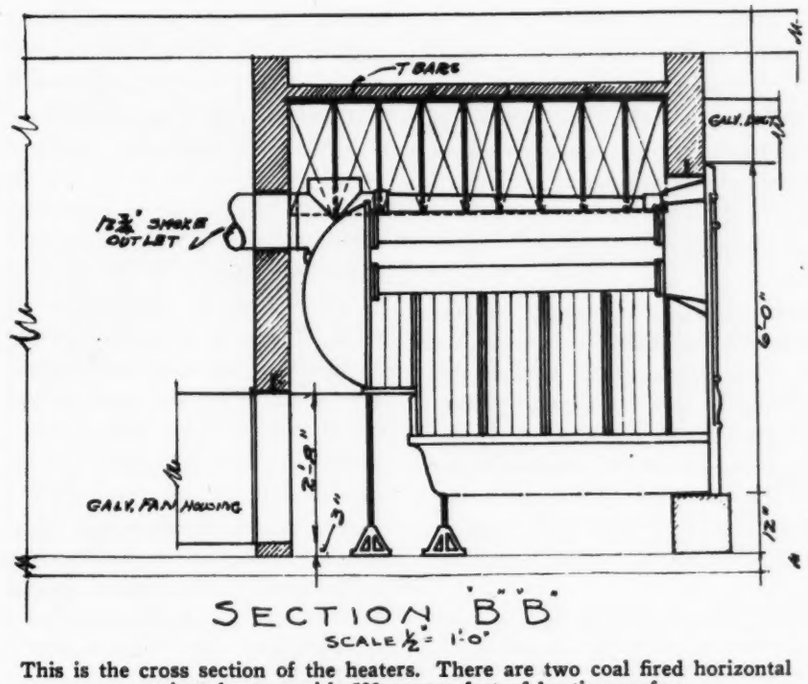


Most of the basement is unexcavated. To provide space for the ducts a 3-foot deep trench was built and lined with concrete. Here is a plan drawing of the duct system through the basement. The heater and fuel rooms are in a full basement.



The second floor contains four class rooms. To simplify the layout, inlet and exhaust grilles are located almost under each other in each room. The warm air inlets are 7 feet 6 inches above the floor and the return air grilles at the floor line

is then forced over the heaters into the plenum chamber, thence into the supply ducts. Part of this air passes under the heaters without being heated and into the tempered air chamber to the right of the heaters.

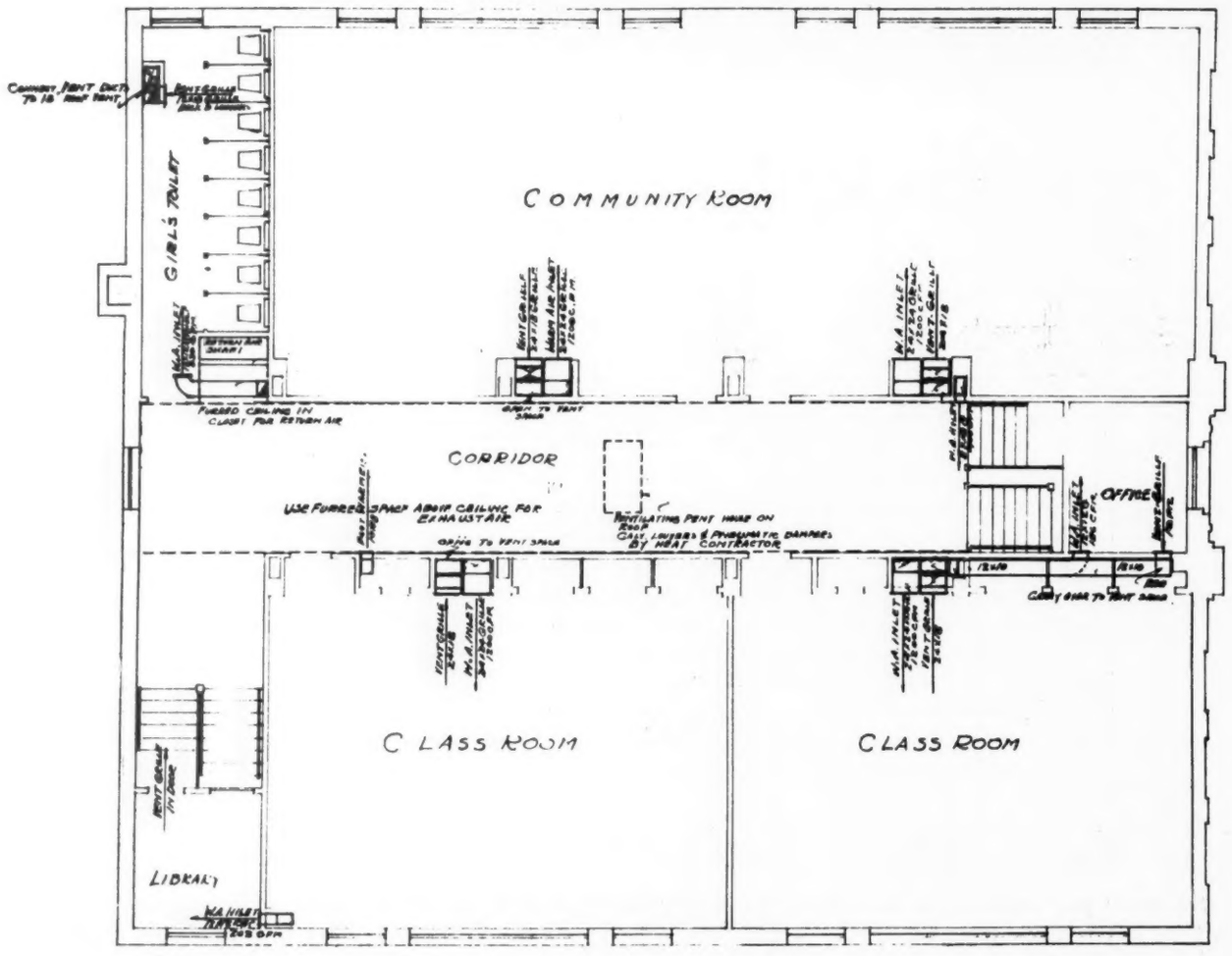


This is the cross section of the heaters. There are two coal fired horizontal cast iron heaters with 500 square feet of heating surface

This chamber is to provide colder air to be mixed with the heated air for temperature regulation of the eight classrooms.

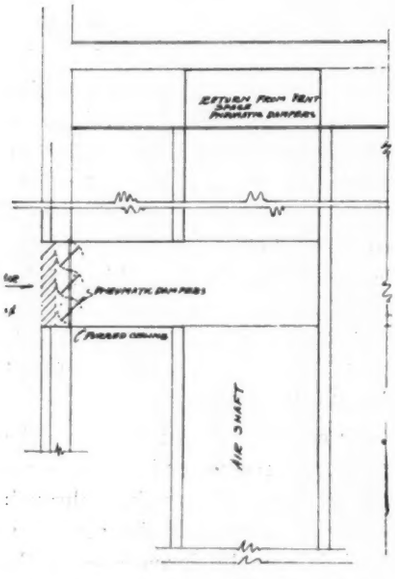
The air enters the classroom through grilles 7 feet 6 inches above the floor. It is exhausted at the floor line through exhaust grilles and carried to the exhaust air space above the second floor ceiling in galvanized risers, 24x12 inches. As this is a fireproof building with concrete floors and roof, the exhaust air space is formed by a false ceiling in the second floor corridor. This space is not lined with galvanized iron, as it is fireproof and practically air-tight.

From this exhaust air space the air passes to the outdoors or is returned down the air shaft through a set of pneumatic dampers controlled from the furnace room. As these return dampers open the dampers in the exhaust ventilator in the roof close. All the air is re-



The intake and exhaust for the first floor is like that of the second. The air is blown into the room above the breathing line, travels across the ceiling and settles to the floor where the exhaust vents pull the air back to the plenum chamber.

turned when the building is being heated up or after school has been dismissed. In very cold weather, about one-half the exhaust air is returned. Considerable saving in fuel is accomplished by this return or recirculation of air.



All inside or all outside air may be passed over the heaters. This plan shows the master dampers which control the inlet to the heaters.

The toilet rooms are vented direct to the outdoors and the exhaust grilles are equipped with back-draft louver dampers.

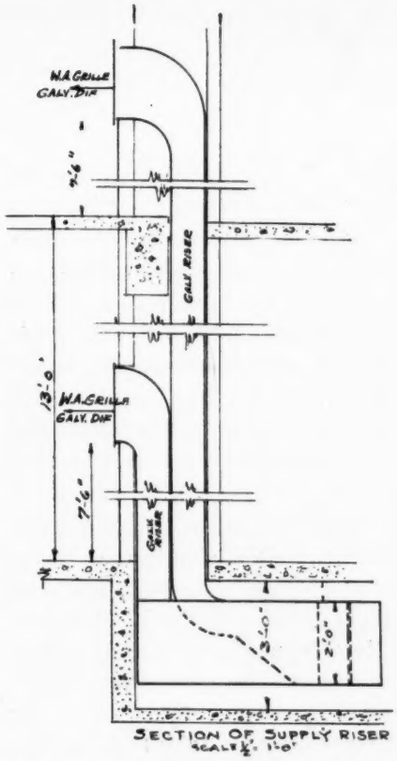
In the section through the heaters, a cross section of the temperature regulation or mixing dampers are shown. A thermostat on the wall of the classroom controls this mixing damper. If we set the thermostat at 70 degrees and our room temperature drops to 69, the damper on the tempered air side will close, and, in closing, opens the damper to the warm air chamber and vice versa.

Humidity is furnished by the installation of a large copper pan in the plenum chamber. This pan has an area of 1,200 square inches of water, or 100 square inches of water for every 1,000 cubic feet of air supplied. This method of humidity supply is far from ideal, as there is no regulation, but from 20 to 25 per cent relative humidity can be maintained.

The air is supplied by a centrifugal fan, single inlet, bottom horizontal discharge. The wheel is 38 inches in diameter and runs at 235 r.p.m. The velocity at the fan discharge is 1,800 feet per minute. The static resistance was figured for ½ inch.

The fan is propelled by a 3-horsepower motor. The belt is 4-inch leather, made endless. Both fan and motor are set on 1 inch of cork, and all sheet metal connections to fan have canvas joints 6 inches long.

The air is warmed with two coal-



The supply risers are double. One riser feeds the first floor and the other the second floor. This is how they look in the wall

fired horizontal cast iron heaters. Each heater has 8.3 square feet of grate surface and the two heaters have a total of 500 square feet of heating surface. These heaters are so constructed that the products of combustion are forced to travel three times the length of the heater before entering the smoke breeching.

The heaters are 8 feet long and we have a fire travel of 24 feet. The air travels up over these heaters at a velocity of from 1,000 to 1,200 feet per minute. The average temperature in the plenum chamber in cold weather is 135 degrees.

The heaters are set 12 inches high from the floor and this allows the air to pass under all parts of the heater before starting up over the firebox sides and top tubes to be heated.

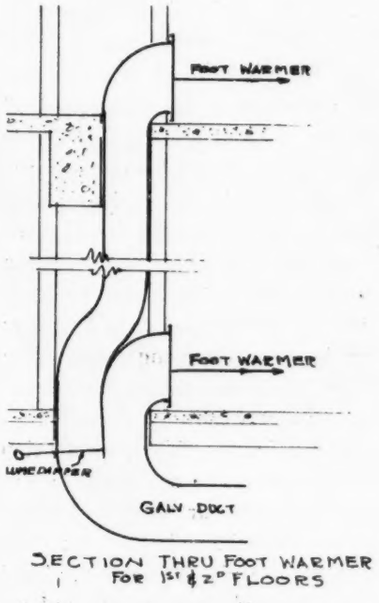
On this installation the heaters are closed in with brick. Walls are laid up 8 inches thick and the deck over is formed of "T" bars and corrugated iron. Cast iron manhole doors are provided in the brick

As warm air heating works more and more into automatic heating, contractors are going to be called upon to know more about heating engineering. In this field Platte Overton is one of the few consulting engineers specializing in warm air work. The methods he uses to figure his jobs can easily be used by any intelligent contractor. If you are interested in these articles or want to ask questions, write him care of *American Artisan*

walls for access to the plenum and tempered air chambers.

This installation is an example of the practical application of the rule that inlets and outlets should be placed on the same wall, namely, the inside wall. Proper diffusion of air is assured by this method.

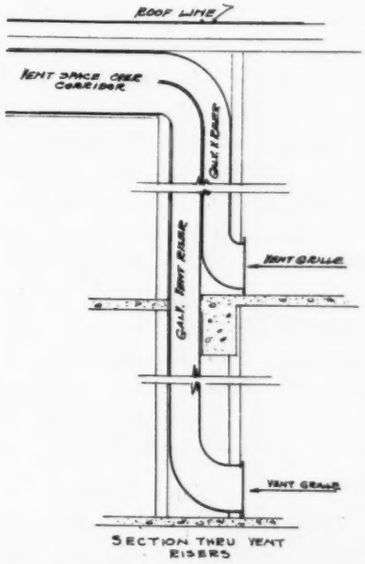
The supply ducts are designed for a velocity of 700-750 feet per minute, and the supply risers for a velocity of 600 feet per minute. The



The cross section of the foot warmer in the two corridors is constructed like the inlet line for the class rooms, but opens at the floor line.

system will keep the building well above the freezing point in coldest winter weather without running the fan, or, in other words, as a gravity system.

No provision is made for dust removal, but the outside air intake is well above the grade and this school is situated in the country. Our one weak point is the lack of a positive and controlled humidity supply. In



The exhaust lines from both the first and second floors is taken up to the second floor ceiling of the corridor where a false ceiling is suspended below the true ceiling. This space is air tight and did not have to be lined with iron.

some cases, school authorities would demand a higher humidity than is possible to supply with this installation. At 10 below zero, using all outside air, 40 per cent relative humidity maintained throughout the building would require almost 0.7 of a gallon of water per minute.

The features of this system here shown are simplicity and efficiency. The price was 20 per cent lower than that asked for a split steam installation and 50 per cent cheaper than a straight hot blast steam system.

The installation was made by the Acme Heating and Ventilating Company of 4224 South Lowe Avenue, Chicago, Illinois. This company installed many fine warm air fan-blast systems and are 100 per cent sold on their efficiency.

A Two-Way Y

August 2, 1930
AMERICAN ARTISAN
Chicago, Ill.
139 North Clark St.

Dear Sirs: For a long time I've wanted to send in this sketch of mine, but knowing how criticism was taken I sort of hesitated. Perhaps somebody has already called your attention to the problem which appeared in your weekly journal of June 7, which to my sense does not seem right. I do not say that mine is perfect—far from it; but the shape of the pattern gives me more satisfaction. Hoping this will be accepted, I remain, as ever your subscriber and admirer of your work.

Anthony Zicke,
348 Dolores St.
San Francisco, Cal.

Although this problem differs a little in development from the one submitted by Mr. Hyatt which appeared in this journal of June 7th, it is the same in nature and principle.

This is rather an unusual fitting (I would rather call it unpopular), for the reason one very seldom takes the trouble of making a thing of this kind. The so-called (get-by) mechanic, always finds some means of getting away from this sort of fitting no matter how limited space is. But the one who loves the trade for the trade's sake, would never betray it whenever an opportunity to show his skill is offered.

I'm sure the lover of the drawing board will find in this problem an ideal object to spend an evening on.

Although this method of development applies to any such fitting, regardless of size or angle, it was drawn here for convenience with the prongs rising on a 45° angle and spreading out from the center forming a 90° angle.

First of all draw a line indefi-

In the American Artisan for June 7, L. F. Hyatt, our contributing editor, worked out a very unusual and interesting pattern for a Two-Way Y. Shortly after the pattern appeared we received a letter from Anthony Ziecke of San Francisco stating that he would like to work out the pattern in a somewhat different way than the one used by Mr. Hvatt.

nitely as shown at (w-x) on which place the half section of large opening. Divide this in as many equal spaces (say 6) and carry lines from these points down to base line (w-x). Now draw from the center 7°, a line of the desired angle of prong (in this case 45°) and measure off its length.

At the end of this draw the half section of small opening and divide it in as many equal spaces as the one above, and connect these points thus cutting through elevation of prong. Alongside of the elevation draw (Section A) equal to large opening and divide it in as many equal spaces carrying lines from these points to intersect lines bearing same numbers on elevation.

The object of this is to develop a true section of miter line where the two prongs are joined together, thus giving the points of intersection for the plan. Draw free-hand a line through these points and we have a true section of miter, as this rises on a right angle from the base.

Now we must draw the plan in order to form the lines for the development of our true lengths.

Right below the elevation draw line (z-s) indefinitely on which drop vertical lines from points 1^x-7°-7^x in elevation and draw large openinging. (Only half section is required, as that is all we need for one prong.) Divide this section also in as many equal spaces as section in elevation.

Now from center (o) draw a line at 45° angle and measure off the plan length of prong which is taken from points (a-b) in elevation. Next, from point (a') in plan (which will become the center of section of small opening there) draw a line perpendicular to (a'-b') and cut line (z-s) at (d) on which draw half section of small opening and divide it in as many equal parts.

(P) is a reproduction of (B) in elevation wherefrom we get our points to develop the elliptical view of small opening in plan. Carry lines from (P) parallel to (a'-d) indefinitely cutting line (a'-b') in plan. On each side of line (a'-b') step off distances of small opening on lines drawn from (P). Connect these points and we have the ellipse.

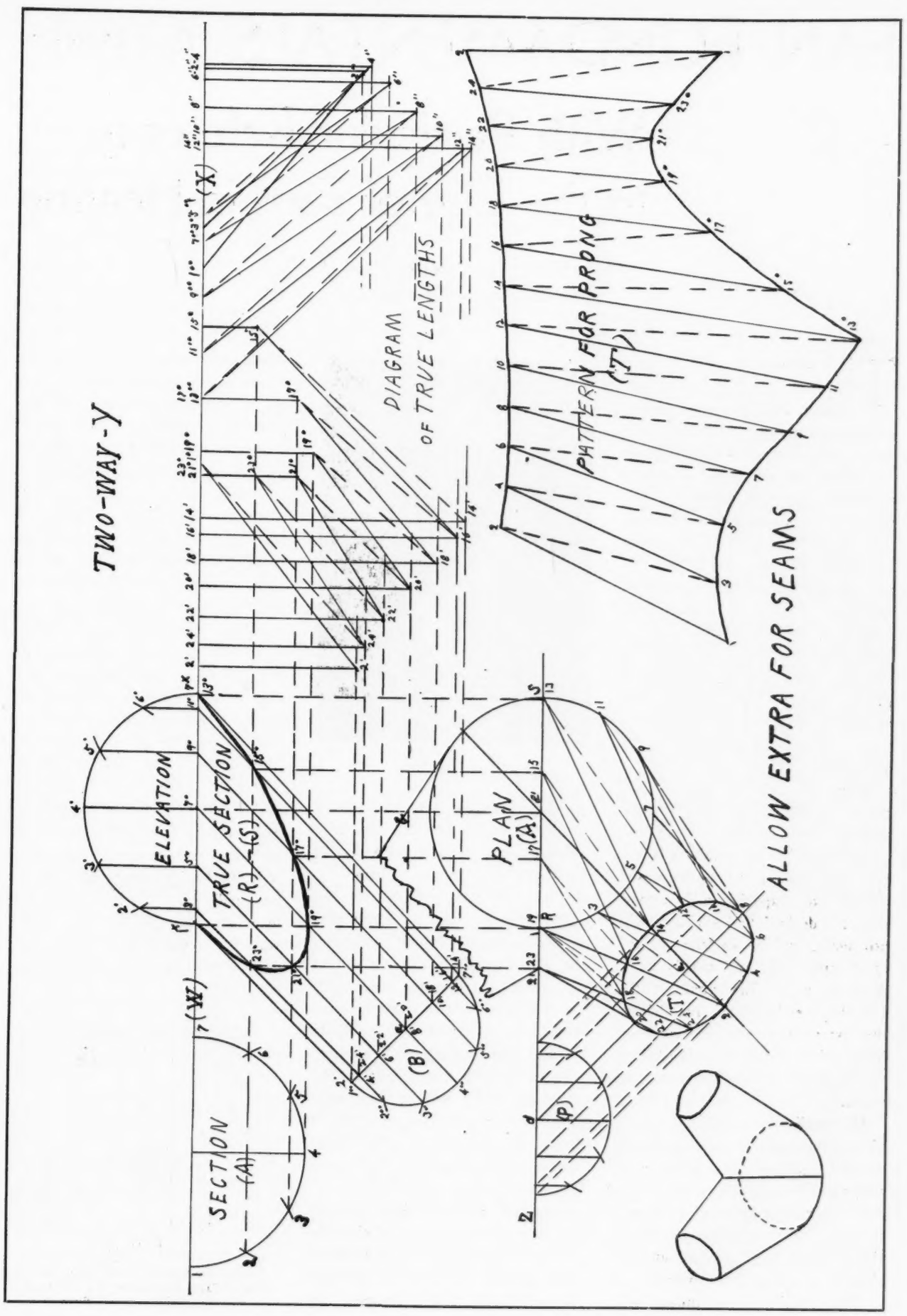
Now we go back to the elevation and drop lines from points 1^x-23°-21°-19) etc., down to line (z-s) thus forming miter line on plan.

Observe that lines (21°-23°) fall in the same place; so does (1^x-19°).

Starting from point (1 and 2) (3 and 4) (5 and 6) etc., connect all these points with heavy lines as shown, and then starting from (2 and 3) (4 and 5) (6 and 7) etc., fill in the dotted lines. Much care must be taken in numbering. Also pay attention that the seam comes on points (1 and 2.)

Now that we have our lines in plan, we are ready to develop the triangles for the true lengths. Notice that to avoid confusion the lines

(*Continued on page* 35)


TWO-WAY-Y
DIAGRAM OF TRUE LENGTHS
PATTERN FOR PRONG ("T")
ALLOW EXTRA FOR SEAMS
ELEVATION
TRUE SECTION (R)-(S)
PLAN (A)
SECTION (A)
(X)
(W)
(B)
(P)
(T)

FAN FUNDAMENTALS Part [VII]

With Particular Reference to the Use of Fans in Heating

By **G. A. VOORHEES**
Heating and Ventilating Engineer, Indianapolis, Ind.

THE installation of a furnace fan has frequently disappointed both the user and the heating contractors because expected fuel savings did not follow.

The heating contractor, accepting as true statements made by over enthusiastic fan manufacturers and distributors, has been led to expect too much and in turn, to promise his customers impossible economies. Salesmen with their glowing accounts of the efficiencies of their respective fans, have sold him on the idea that the right fan will greatly increase the efficiency and materially reduce the fuel consumption of almost any and every warm air heating system.

When he fails to get the expected results, he possibly decides that he used too small a fan and on the next job he installs a larger one, confident that the increased air-handling capacity will accomplish the desired fuel saving. Failure again, and he switches to another make of fan, usually of a different type. But none of the fans have reduced the fuel bill to the extent that various salesmen have either stated or implied, and the heating contractor begins to wonder.

He recalls the arguments of the ultra-conservative furnace man who sticks to gravity heating and who, although he concedes that a fan may sometimes help a job, stoutly maintains that nothing can equal the efficiency and general satisfaction of a good gravity system.

Who is right—the enthusiast who

G. A. Voorhees

claims everything for fan heating or the doubting Thomas who contends that the furnace fan will have its day like the pipeless furnace?

The truth seems to be that the fan is here to stay—not because it is just another "gadget" added to the heating plant to increase the selling price and boost the profit. In that case, its use would be basically unsound and it could not long survive the buffeting competition of gravity-circulating systems. The fan idea could not in fact, have made the steady progress that it has in the past few years if it had not shown beneficial results in most cases.

In addition to definitely improving the service rendered by the *average* warm air furnace plant, it is recognized as the necessary accompaniment of the complete air conditioning system which will soon be as greatly in demand as the bare gravity circulating warm air furnace has been in the recent past.

Among the several essentials of the true air conditioning system are (1) air cleaning devices and (2) provision for summer cooling of the room air. Most, if not all, air cleaning devices worthy of the name impose some resistance to the flow of the circulating air and therefore demand a fan to overcome the resistance and maintain the desired air flow; summer cooling of the rooms requires the delivery of relatively heavy, cool air which cannot be circulated through the customary duct system without a fan.

All of these facts, as well as many others that will occur to the alert and progressive furnace man indicate to him that, whether he personally likes fan heating or not, he must either get into it or make way for a more progressive competitor who has the vision to pic-

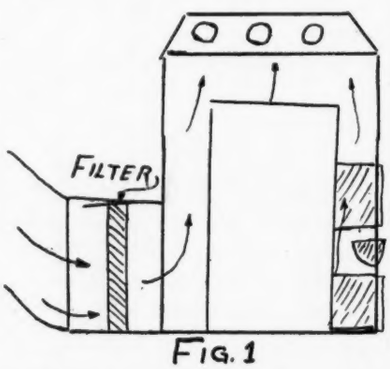


FIG. 1

Filters impose a restriction to air flow. Fans overcome the resistance and maintain air flow

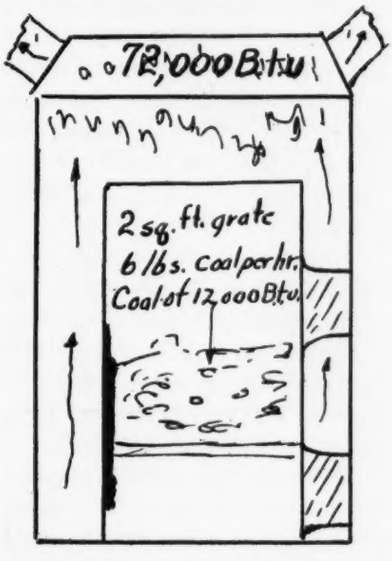
ture the rapidly growing sales possibilities of fan heating systems and the future sale of the new and coming comfort systems of air conditioning.

These facts make it desirable not only to get into fan heating, but to get into it *RIGHT*. The heating contractor cannot afford to risk injury to his prestige in his community by installing fan systems which are in any way unsatisfactory to the users.

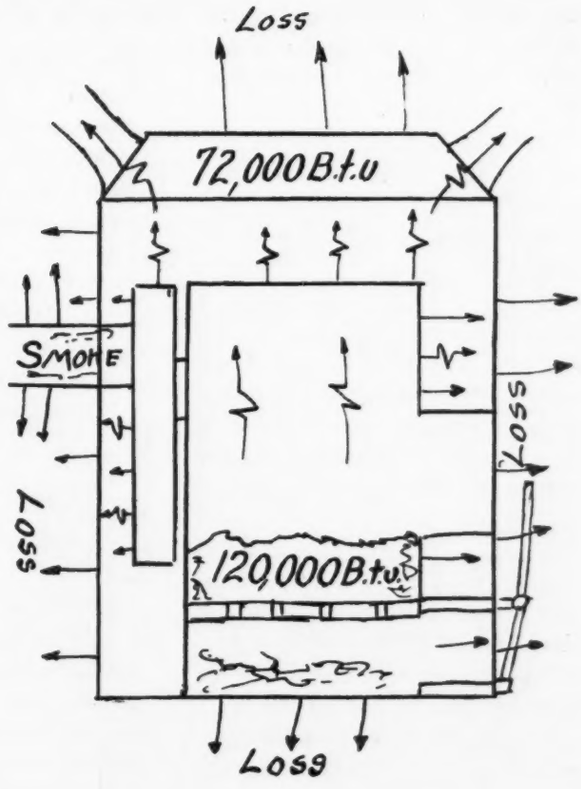
It is, therefore, unfortunate that, with all the advantages accompanying a proper application of furnace fans, the over-sanguine fan manufacturer or distributor has stressed the economy feature so strongly and thus led the heating contractor to talk entirely too much about the economy of fan heating.

A furnace fan installation in the *average* residence cannot bring the fuel consumption down very far below that of a well designed and properly installed gravity system. Please note I have said—average.

It is undeniably true that there are some classes of buildings and several types of warm air furnace installations where suitable furnace fans can and do effect substantial fuel savings. If fan salesmen and heating contractors will talk economy only in such cases where the fan applictaion will materially increase the efficiency of the plant, well and good. But to broadcast the misleading statement covering warm air heating plants in general, that a furnace fan "will cut the coal bill fifty per cent," is a serious hindrance to a healthy and profitable development of fan heating.



The capacity of a furnace is the number of B.t.u.'s per hour available at the bonnet. The controlling factor is amount of fuel burned



The efficiency of a furnace is the ratio of the quantity of heat delivered at the bonnet to the total heat content of the fuel. The efficiency of the above furnace is 72,000 ÷ 120,000 = 60 per cent

For his own protection, the heating contractor should know something of the limitations of a fan system as regards fuel savings. This requires a clear understanding of the difference between "capacity" and "efficiency" as these two terms are applied in describing the operation of a furnace or heating plant.

The *capacity* of a furnace is the quantity of heat it will generate and make available at the casing bonnet ready for delivery to the rooms through the warm air leaders.

Thus, if the quantity of heat delivered at the casing hood in one hour is 72,000 B.t.u., then it is said that the *capacity* of the furnace is 72,000 B.t.u. per hour. In stating the capacity of a given furnace, some one or more governing factors must be either stated or assumed. Usually, though not necessarily, the combustion rate is the principal controlling factor because the greater the weight of coal burned in a given time, the greater the quantity of heat delivered by the furnace.

If a given furnace burns ten pounds of coal in one hour and if the grate of the furnace has an area of two square feet, the combustion rate is "five pounds of coal per square foot of grate per hour." Now if a chemical analysis of this coal shows it to contain 12,000 B.t.u. per pound, the total heat content of the coal consumed in one hour is 120,000 B.t.u.

(10) lbs.) × (12,000 B.t.u. per lb.)
= 120,000 B. t.u.

Then if no heat were lost in any way, we would expect the furnace to deliver that quantity of heat (120,000 B.t.u.) at the furnace bonnet in one hour. But some unburned combustible matter is found in the ash and in the smoke; some heat is radiated and transmitted downward into the ground below the furnace base; some is given off by radiation and convection from the furnace casing; some escapes

as sensible heat in the smoke (meaning that the smoke is hot, which it must be to create draft in the chimney flue).

Because of such losses the furnace cannot deliver the full heat content of the coal and if, as previously assumed, the quantity of heat delivered at the bonnet is found to be 72,000 B.t.u. per hour, it becomes evident that the furnace has delivered 60 per cent of the heat content of the coal burned. This percentage is the *efficiency* of the furnace from which we may derive the following definition:

The *efficiency* of a furnace is *the ratio of the quantity of heat delivered at the furnace bonnet* (called the furnace capacity) *to the total heat content of the coal burned.*

In the case just considered, the furnace capacity was 72,000 B.t.u. per hour and the furnace efficiency was 60 per cent when burning coal at the rate of five pounds per square foot of grate per hour. See accompanying diagram.

One important reason for distinguishing between capacity and efficiency is illustrated by the following: Ten years ago in the mechanical engineering laboratory at the University of Illinois, a preliminary fan test was made to determine what increase in efficiency and capacity might be obtained by attaching a fan to a furnace. Since this test was intended to show the effect of a fan on the furnace itself and not on the heating plant as a whole, a pipeless furnace was used.

Mr. Voorhees says — the fan is here to stay; it is not a gadget. The fan definitely improves the *average* heating plant. But a fan is absolutely necessary in any air conditioning system, and it is the air conditioning system which holds the greatest future for the warm air heating industry.

Records were made of the register air temperature with gravity circulation and when the fan was used *the same register air temperature* was maintained by increasing the combustion rate (forced firing) and it was found that the furnace *capacity* was more than doubled. The data was published in Bulletin 120 and some fan enthusiasts have been heard to say "Bulletin 120 of the University of Illinois proves that the efficiency of a furnace can be more than doubled by using a fan."

Here is a serious confusion of terms; the capacity, *not the efficiency,* was more than doubled. The increase in capacity was due to the *increased quantity of coal that was burned* when the fan was running and this increased combustion rate was necessary because, for the purpose of this particular test, the temperature of air leaving the register was kept exactly the same for both gravity flow and forced-air flow.

Along with this increase in capacity, there was also an increase in efficiency. With gravity circulation, the efficiency of the furnace was 58 per cent; that is to say, 58 per cent of the total heat content of the coal burned was delivered at the register. (It is important to note that the capacity and efficiency at the register of a pipeless furnace are practically equivalent to capacity and efficiency at the casing bonnet of a pipe installation.) With fan circulation, the efficiency rose from 58 to 68 per cent, an increase of 17.2 per cent in furnace efficiency.

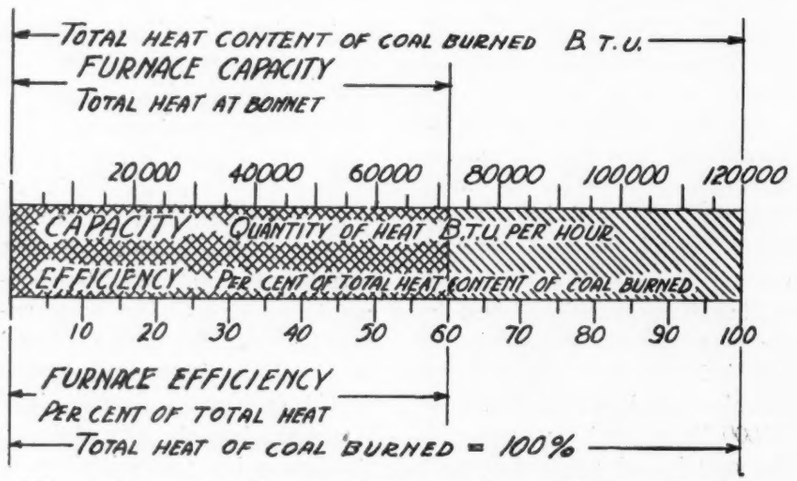
$$\frac{0.68 - 0.58}{0.58} = 0.172 \text{ or } 17.2\%$$

There's a vast difference between an increased efficiency of 17.2 per cent and efficiency "more than doubled" as misquoted by some fan enthusiasts. Furthermore, this increase of 17.2 per cent in furnace efficiency was secured under conditions that do not exist in actual fan heating installations.

In actual practice when a plant is converted from gravity to forced air circulation, the temperature of air flowing through the hot side of the system is materially reduced whereas in the test being discussed, the temperature of air leaving the furnace was maintained at the same point for both types of circulation.

The question now becomes: What increase if any, can be expected in the efficiency of a given furnace under actual operating conditions if the plant of which the furnace is a part, is changed from gravity to forced air circulation?

To fully discuss this question would lead into a number of rather confusing technicalities and would therefore lie outside the scope of this series of articles the purpose of which is to present in as non-



This graph shows the difference between capacity and efficiency. The determining factors are amount of coal, number of B.t.u.'s delivered at bonnet and number of B.t.u.'s in the coal

technical a way as possible, some of the more important fundamental factors affecting furnace fan performance.

Furthermore, there is a more or less disagreement among engineers as to the proper relation between furnace efficiencies and the overall efficiencies of heating plants where furnace fans are applied, and it is the writer's fixed belief that whatever practical value these articles may have would be largely destroyed by including any controversial topics.

It is interesting to note that the Wichita (Kansas) Gas Company reports a comparison of three gas-fired warm air heating plants which operated by gravity circulation during the winter of 1927-28 and by fan circulation during 1928-29. Plant No. 1 consumed 70 cubic feet of gas per degree day with natural gravity circulation and 58 cubic feet per degree day with fan circulation, a saving of 17 per cent in fuel to fan use. In plant No. 2, the fan reduced the cubic feet of gas burned per degree day from 89 for gravity flow to 75 for forced circulation, a saving of 16 per cent. Plant No. 3 showed a reduction from 67 to 47.5 cubic feet of gas per degree day which amounts to a 29 per cent fuel saving due to fan use.

In considering the rather large fuel savings shown by the above report of gas-fired installations, it should be borne in mind that a greater saving in fuel is to be expected in the case of oil or gas than where solid fuel is burned. The gas or oil burner usually operates intermittently, whereas coal or coke supplies continuous heat. With intermittently applied heat and gravity air flow, the entire circulation of air through the system dies down after the burner has been shut off for a short time; then when the burner turns on, it takes some time for the air circulation to get back to an efficient velocity. This sluggishness in the air flow is a direct cause of fuel waste. When burning solid fuel, while the circulation slows down considerably during intervals when the fire is checked and a relatively small quantity of heat is being put into the air, there is still enough movement (usually) to permit the circulating system to respond quickly when the fire becomes hot.

A TWO-WAY Y

(*Continued from page* 30)

of the base are kept separate from lines of the miter.

Take line (1-2) from plan and place it on line (x) as (1°°-2″). Then take line (2-3) from plan and starting from (2″) on line (x) mark number (3°°). Now with (3-4) in plan starting from (3°°) on line (x) mark (4″)and so on back and forth till you have all the lines up to (13-14) of plan on line (x).

Remember that the odd numbers (1°°-3°°-5°°) etc., represent the base, and even numbers the top of prong.

Drop vertical lines from points 2″-4″-6″-8″-10″-12″-14″ to intersect horizontal lines drawn from section (B) of equal numbers. Connect these points with numbers on line (x) as (1°°-2″) (2″-3°°) (3°°-4″) etc., and we have the true lengths for (1 to 14) in plan.

We do the same with top part of prong except that the odd numbers here must be dropped to intersect lines drawn from true section (R-S), for that is as far as these lines come at the miter.

Drop vertical lines as before from numbers (14′-16′-18) etc., to intersect lines drawn from section (B) and connect points (14′-15°-16′-17°) etc., and we have the true lengths for top of prong.

Now to develop the pattern we start from line (1°°-2″) of true lengths and set it down as shown on pattern (T). Then from point (2) on pattern and distance from (2″-3°°) in diagram draw an arc intersecting arc drawn from (1) equal to space (1-3) in plan. Now from (3) in pattern as center and distance (3°°-4″) in diagram as radius describe another arc cutting the one drawn from (2) equal to space (1°°-2°°) of section (B). Keep this up to numbers (13-14) where the spaces at the bottom change, due that here the base stops and miter begins. The process is the same as before, except that now we take the spaces from true section (R-S) instead of in plan for lower part of pattern.

Draw a line through these points and the pattern for one prong is finished. See that there is equal spaces at top and bottom, and if in the process a line should throw you out check over for there must be something wrong.

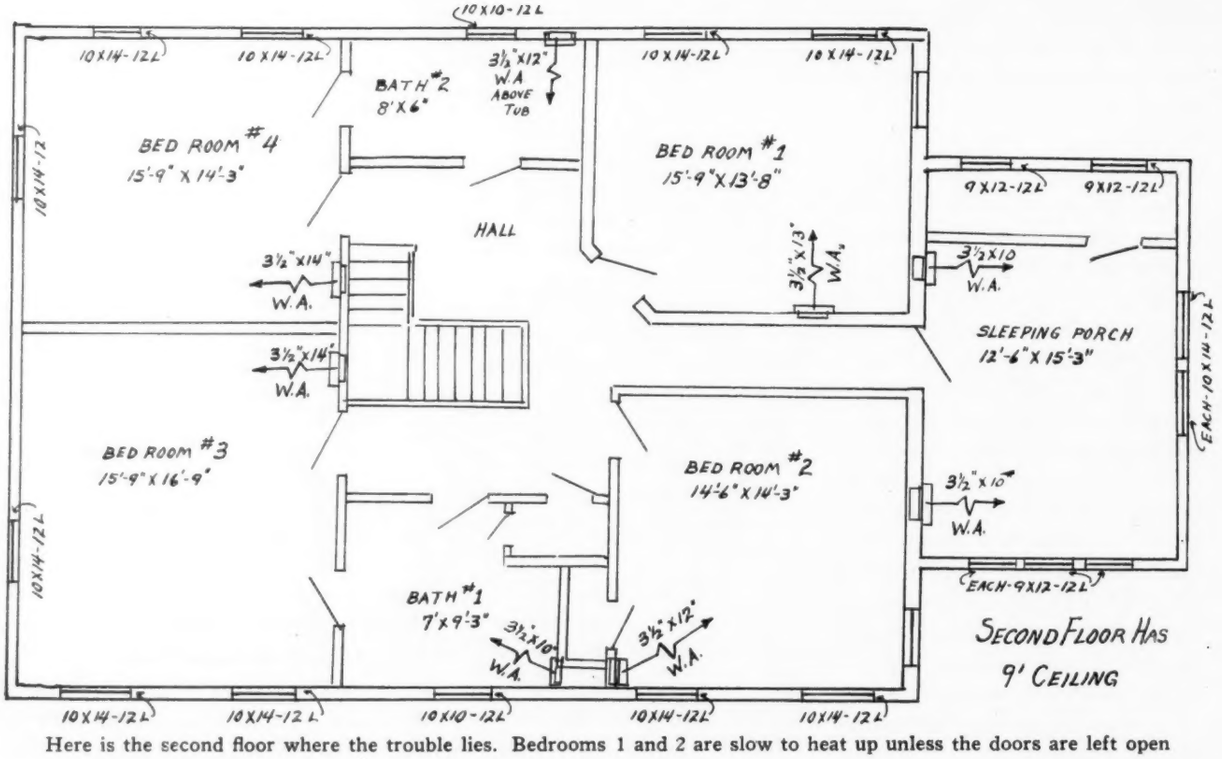
Provision must be made for seams.

Oil Burner Industry 11% Ahead of Last Year

Manufacturers of domestic oil burners not only have escaped the general business depression of the past twelve months but are enjoying the most prosperous year in the history of the industry, it was revealed at the quarterly meeting of the directors of the American Oil Burner Association in Atlantic City on October 15.

Sales for the current year were more than 11 per cent ahead of the same period last year, according to Harry F. Tapp, executive secretary of the Association. Some companies reported an increase of more than 50 per cent and the directors were unanimous in their opinion that 1930 would exceed by a generous margin the record established last year when more than 125,000 oil burners were placed in American homes.

More than 600,000 household burners already are in use, it was revealed, and it was conservatively estimated that the total in use at the end of 1930 will exceed 655,000. In addition to the burners absorbed by the domestic market, a large number are being exported, it was disclosed. Complete export figures at the end of this year are expected to show a greater volume of overseas business than ever before in the history of the industry.



Here is the second floor where the trouble lies. Bedrooms 1 and 2 are slow to heat up unless the doors are left open

Remember That Troubleshooter Problem? HERE'S THE FIRST SOLUTIONS

IN the October issue we published an article showing the heating layout of a house which doesn't heat as the contractor and owner feel it should. We explained the bugs which seemed inherent in the system. Both the contractor and the owner want to eliminate these troubles and between them arranged to abide by the consensus of opinion as expressed by readers of AMERICAN ARTISAN.

In reply to this interesting problem we have had a large number of replies. Some of the solutions we have had to discard because the boys sending them in didn't pay attention to the remarks made about what could and couldn't be done with the system.

The principal things wrong with the system are—bedrooms numbers 1 and 2 and the sleeping porch, all on the second floor, are very slow to heat up in the morning, especially if the doors are closed. Then if the doors are left open the rooms will get much warmer than any other rooms in the house.

We are delighted to find a uniformity in the solutions to this problem. Here is what our readers—collectively—would do:

Eliminate the air bound condition.

Provide exit for the air through attic ventilators, stacks to the return air grilles of the first floor, openings through the partitions to the hall, or return air grilles in the hall.

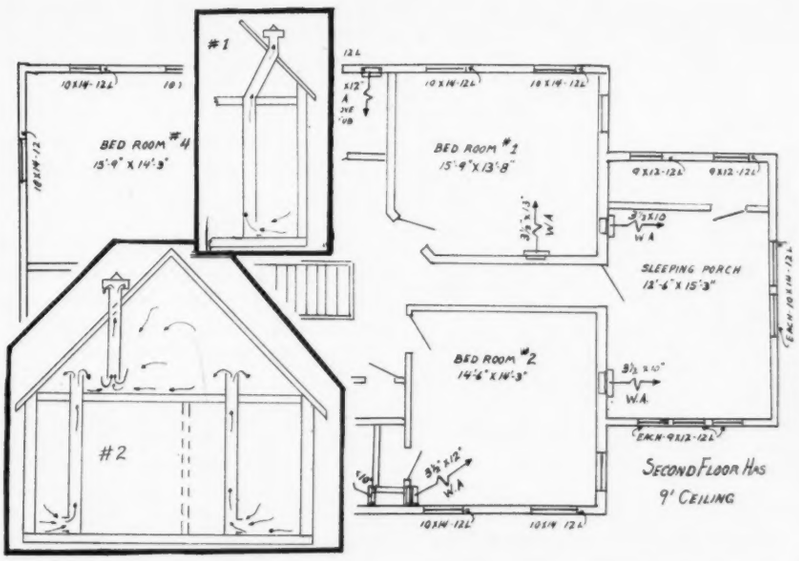
Some additional solutions will be published in the next issue.

In giving their solutions to the trouble, practically every writer said that the main thing wrong was that *the rooms are air bound.*

In other words, there has been no provision made for the warm air entering these rooms to leave as cold air. The result is that the pressure is built up inside the rooms and the warm air cannot enter.

We present here the first of the replies. We also show drawings made to illustrate the changes the writers suggest.

We would like to call your special attention to the uniformity of the replies. This, so it seems to us, indicates that our readers know their B.t.u.'s and also indicates that the consensus of opinion is in favor of making some provision for re-



This shows G. A. Voorhees' suggested changes. The changes are designed to correct the air bound condition and give the air a chance to get out through the attic

turn air to get out of the rooms.

G. A. Voorhees, Indianapolis

One of the most interesting replies came from G. A. Voorhees of Indianapolis. Mr. Voorhees is the gentleman who has been writing those instructive letters on Fan Fundamentals. He is, besides being an authority on fans, a first-class heating engineer. The drawing shows the changes he recommends. His answer is as follows:

The fact that the sleeping porch and two bedrooms heat freely when the doors leading to the hall are open indicates the need of removing cold air and thus setting up a circulation.

Since the house is completed and the plant installed, it might be (and usually is in such cases) impractical to install return air ducts from the rooms in question without considerable rearrangement of the basement piping system.

I suggest, therefore, that vent registers be placed in each room. The space between the studding permits this air to flow upward through the attic from the vent registers to a roof ventilator. (See Fig. 1.) This withdrawal of cold air from the floor line enables the warm air to freely enter the rooms through the warm air registers.

Install a cold air pipe at some convenient point to deliver a sufficient quantity of outside air to the cold air piping system to compensate for air removed from the house by the proposed vent system, otherwise infiltration will be increased.

This method has worked out nicely in many cases and I am confident that it will do so on this job.

Sometimes I do not connect from the vent space in the wall to the roof ventilator. In this case a stub of rectangular pipe the size of the vent space should be used in the attic to prevent cold air flowing down from the attic to the room. (Fig. 2.)

B. F. John, Philadelphia

Another very interesting letter, suggesting much the same solution as that of Mr. Voorhees, came from Benjamin F. John of Philadelphia. Mr. John is well known in the heating industry and has been doing warm air heating in his home city for many, many years. A sketch showing his suggested arrangement of the vent pipes is also shown.

Mr. John says:

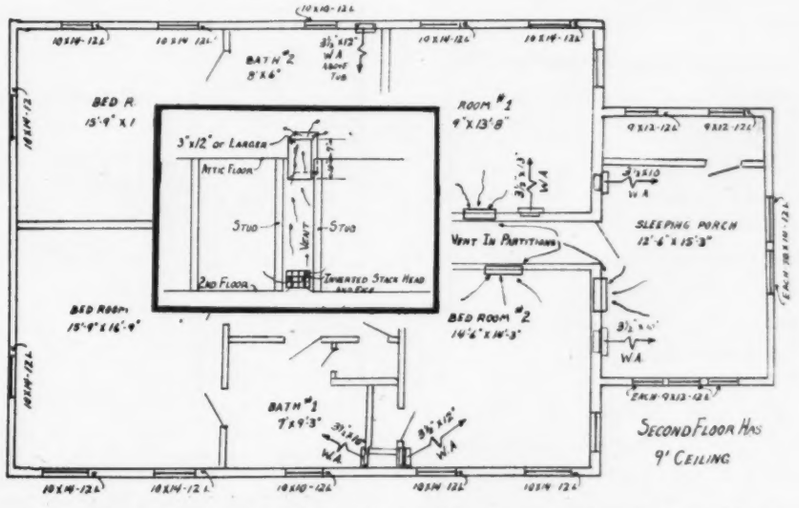
The bugs are confined to bedrooms Nos. 1 and 2 and sleeping porch, second floor. These appear to be heated from the end of heat trunks. The size of the heat stacks are correct for forced air.

As first class equipment was used and an architect was employed, no doubt this house has been well weatherstripped, and as pressure exists from northwest to southeast, there is not much chance to exhaust any air from these rooms when the doors are closed. Heat will not enter through the register in sufficient quantity when the rooms are air bound.

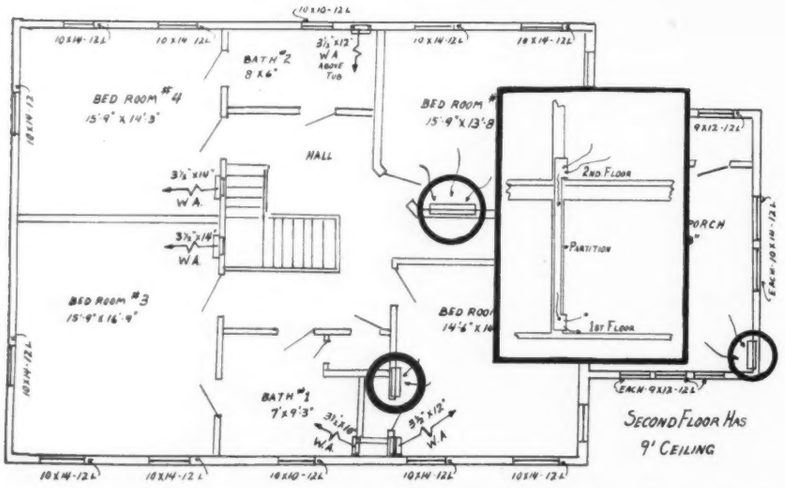
The fact that the rooms do heat when the doors are open proves that circulation and ventilation are then introduced. When the doors are open or when circulation and ventilation are introduced, then an adjustment of the dampers or register movement can prevent overheating.

No doubt there is an attic space above the rooms, and an air space over the sleeping porch.

Place an inverted 8x12-inch register head, at the floor line, between two studs, in the partition between bedrooms and hallway, using the space between the studs for a vent. Open the attic floor over these studs and place a 3x12-inch short piece of pipe in the opening (18 inches long), allowing 6 inches to extend above the attic floor. The space between the studs does not need lining.



B. F. John sends this layout. Again the changes are designed to provide an outlet for the air the fan is introducing. See the text for complete details



Dan Patten would take air from the second floor and provide an outlet to the return air registers of the first floor. This shows how to would remedy the trouble

Then, by placing a register or face on the inverted head, you will have a complete vertical ventilating stack and relieve the pressure that prevents the heat from entering the rooms. The sleeping porch may be ventilated in the same manner, or in the ceiling.

This method is inexpensive yet effective in tight, isolated rooms, and has always given satisfaction.

If the owner wishes to check this solution, let him close the doors in the morning and open two east or south windows 1 inch from the top. Place an anenometer at the registers before doing so and afterward, and note the difference in the flow of air through the registers.

I have cured a number of jobs in this manner. The fault is due to the fact that the house is tight, probably metal weatherstripped, and the rooms complained of are too far away from the stairway to create any suction from the grill at the base of the stairs.

D. C. Patten, Sycamore, Ill.

Dan C. Patten of the J. V. Patten Company, Sycamore, Illinois, manufacturers and engineers of heating systems, also suggests that the rooms are air bound and that some means of relieving back pressure against which the fan has to work is the easiest way to overcome the trouble.

However, he also raises some points with regard to the ability of the fan to overcome the pressure formed within the rooms which do not heat. These points are well worth considering. His solution reads as follows:

Here are a few sidelights on the troubleshooter article in the October 11 issue.

Warm air heating contractors have not yet profited as they should from the evident conclusions regarding the location of return air registers arrived at in the research residence at Urbana. This contractor has placed his return air faces just as far from the furnace as he could possibly get them—with the exception of the one in the hall.

Floor drafts are entirely a matter of turbulency combined with temperature differences at floor and ceiling, which in turn are dependent upon rapidity of circulation. Rapid circulation is dependent on the least possible duct friction in the system. Then why locate the return airs at the ends of the earth, where the duct system must be long, involved, clumsy and inefficient?

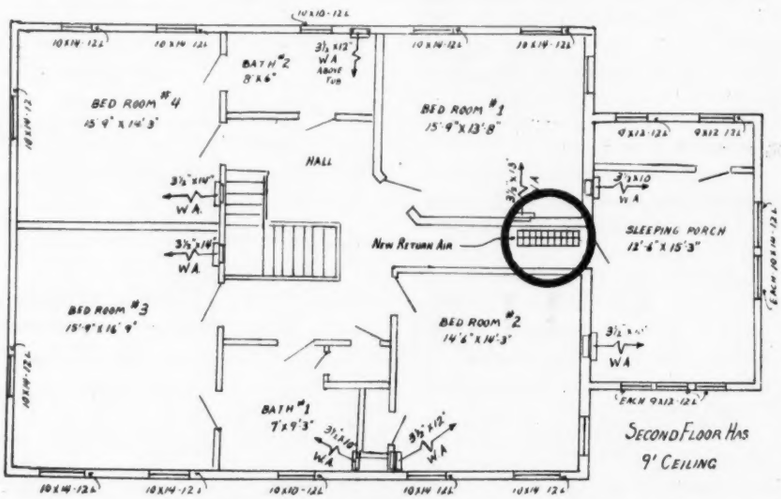
The No. 1500 L. S. Miles fan is a propeller type fan and our experience is that it will "coast on the air" and deliver only a portion of its rated c.f.m. if the friction caused by long ducts and angles and turns interferes with the free access of return air to the fan boot.

Everything else being equal and according to Hoyle and the Standard Code, the rooms that are giving the trouble *should* be the warmest, the two bedrooms having very little exposure and the sleeping porch, with its two warm air runs, having protection on the north and west.

When the doors to these rooms are closed, considerable pressure is built up in the rooms—the only return air possible being under the doors. With the fan delivering only a portion of its capacity, due to the involved return airs, the air delivered will take the line of least resistance and will not travel through these long runs but through the short runs to the upstairs rooms and through the downstairs runs where return air is available.

The only way that I can see to relieve the situation, leaving the installation as it now stands, would be to relieve the pressure condition in these rooms by installing 30x12-inch baseboard return air grilles at the floor in the upstairs rooms and the same size and type of grilles directly under these at the floor downstairs, locating these grilles to be as close as possible to the downstairs return air registers.

Such a remedy will allow the air from the upstairs rooms to flow down through the partition walls to the floor downstairs and provide return air to the furnace when the



Charles Cook believes that one large grille in the floor outside the sleeping porch door would "pull" air out of the bedrooms. This grille would have to be connected into the return air line

doors upstairs are closed. I have used this type of upstairs return air with signal success and sincerely believe that it will fit the bill in this instance.

Charles C. Cook

Then here is another short and snappy solution which comes from Charles C. Cook of Iowa. Mr. Cook also says the rooms are undoubtedly air bound and that improved recirculation of the air would overcome the trouble. Mr. Cook says:

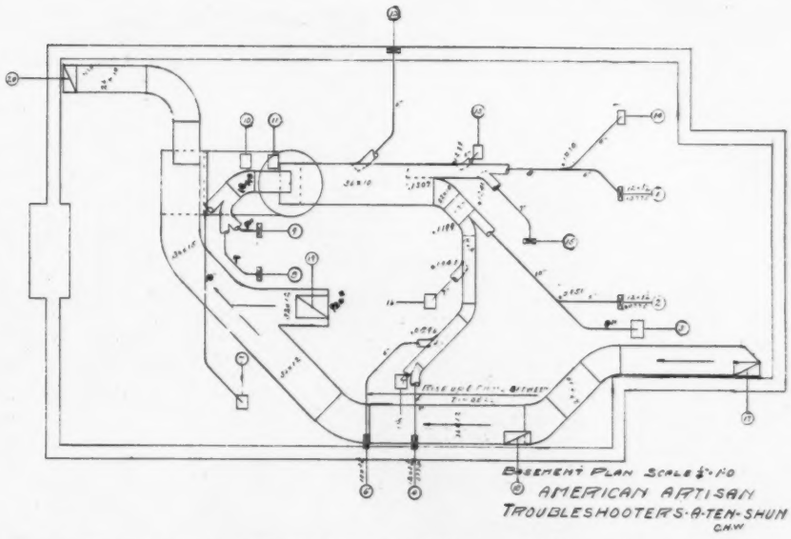
In reply to the request to remedy bugs in the enclosed plan, as owner does not wish to tear up house to any extent, believe the enclosed suggestion will eliminate present bugs. Have not figured out size of ducts on return air, as the brother wanting the information can do that, as he knows the basement layout, which I do not.

Connect upstairs return with added C. A., 6x30-inch upstairs return, either side wall or out of hall floor. Size depends on available space you can get in studdings.

C. H. Wilson, Troy, N. Y.

One of the most detailed solutions comes from C. H. Wilson of Troy, New York. Mr. Wilson analyzes the system from start to finish and raises some points which probably will bear looking into. In addition Mr. Wilson sends detailed sketches of the installation and some very complete data sheets.

We would certainly like to show these data sheets, but space will not permit, as the figures are small and the sheets too long for our page The general facts of the sheets are contained in his letter. Here is what Mr. Wilson has to say:



The basement layout suggested by C. H. Wilson. The layout is exceptionally simple—one main warm air line and one return air line. On the warm air side a combination of rectangular duct and round pipe is used

The writer has been a reader of your valuable paper for some years and I have noted with much interest the various trouble problems appearing from time to time. I am particularly interested in the article, "Troubleshooters, A-ten-shun!"

Wherever there is trouble there must be a cause. This building has 14 rooms, 16 heat and 3 return registers.

The needed information being absent to properly or intelligently criticize this job from the *outside* looking in, here goes:

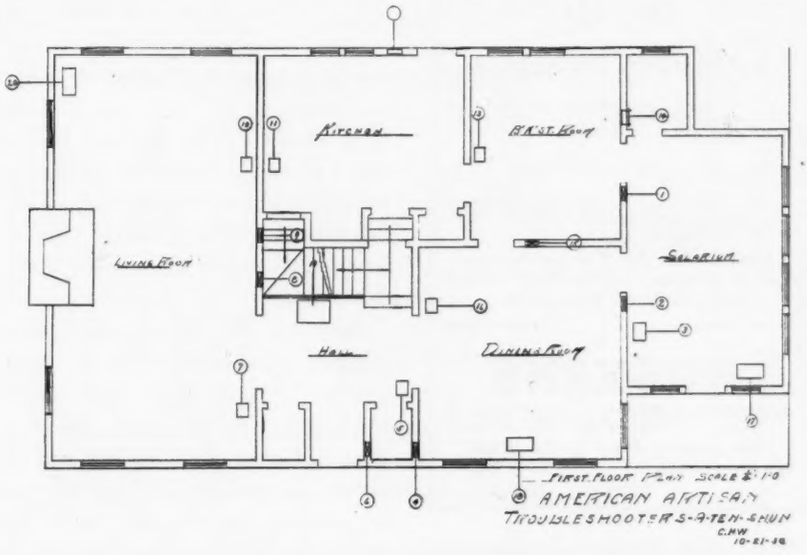
My calculations show a content of 27,518 cubic feet and a heat loss of 164,000 B.t.u. per hour. Considering bedroom No. 2 register, which seems to be the farthest from the furnace, and assuming a bonnet temperature of 150 degrees and allowing for a tmperature drop from bonnet to register of one-half of 1 degree per foot when pipes are not covered, the sleeping porch will require 125 c.f.m. at each register; bedrooms 1 and 2 will require 175 c.f.m. each.

If this job is balanced up on the pressure loss method, as there is a pressure at the base of each of the risers mentioned of .0775 inch of water, adding to this as we proportion our duct size and loosing at branches, the pressure at the heater will be .1758 inch. Adding the pressure created in the return duct, the total pressure the No. 1500 Miles L. S. fan will have to work against will be nearly .25 inch. The Miles No. 1500 L. S. fan will only furnish about 1,500 c.f.m. against this pressure.

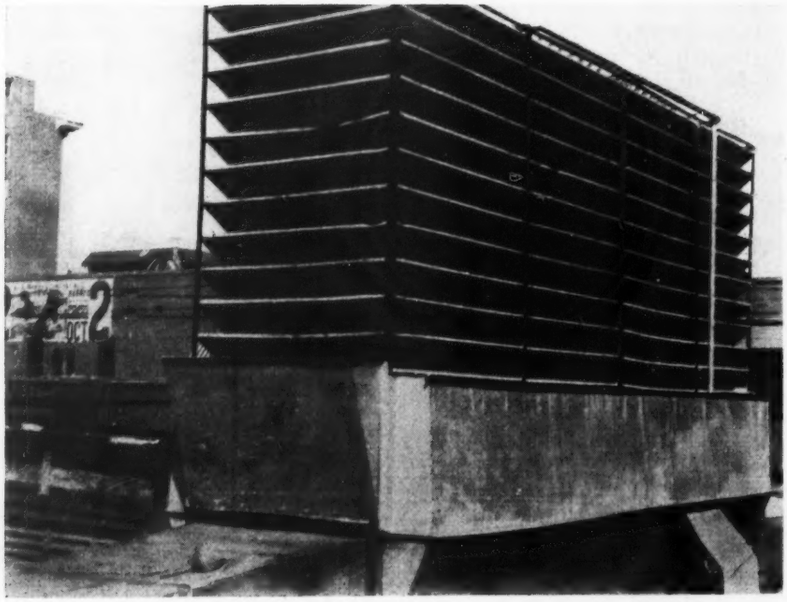
If Mr. Dealer will use a fan capable of delivering 2,200 cubic feet per minute against .25 pressure, and adjust his dampers to balance the system, I feel he will heat this building.

Has anybody obtained the velocity through the heater? This should be from 700 to 800 feet per minute to obtain a bonnet temperature of 150 degrees, if hard coal is used with a heater of this type.

I am enclosing a sketch of the first floor and basement with a system showing sizes of duct work. On this layout the pressure is balanced. Some of my sizes shown may invite criticism. Let them shoot.



Here are Mr. Wilson's first floor registers and grilles. This system is designed to be balanced without the use of dampers



Arizona Sheet Metal Contractors BUILD AND SELL COOLING UNITS

By **A. B. LAING**
Phoenix, Arizona

EVERY sheet metal contractor in the country would like to know how to make more money—how to bolster his sales in seasonal periods when business is normally quiet—how to keep his crews together during times of comparative inactivity.

Here is one way that the problem is being solved by some of the live sheet metal men of the South and Southwestern states.

Realizing that there is a waiting field for a low-priced method of cooling homes and buildings, sheet metal contractors have evolved several simple devices which can be attached to a warm air furnace so that cold air may be forced through the ducts in the summer months.

Sounds simple!

Of course it is. So was the Tom Thumb golf idea, yet this toy game has swept the country like a hurricane, leaving in its path a golden harvest for its originators.

In the building field the big rewards go to the man who is first with a novelty in his own line—something the public needs, or thinks it does. And he must be equipped to furnish it before the heavy competition sets in—to cash in on the extra profits possible while the article is new. But the public does not often *buy* anything—they are *sold* it by the live merchandiser. They have to be told about it again and again by advertising.

HOSKINS
Dry Air
Cooling System
Air is cooled by being forced through metal tubes surrounded by circulating water. Air never coming in contact with water and insures cool dry air at all times.
Very simple . . . no intricate machinery . . . inexpensive to operate.
Units built for homes or store buildings. ACTUAL TEST SHOWS TEMPERATURE REDUCED FROM 15 TO 20 DEGREES.
Hoskins Dry Air Cooling System Now in operation at Green Frog Billiard Room, 29 North First Avenue
Patent Applied For
Estimates Made
Built By
HOSKINS
SHEET METAL WORKS
See Working Plant in Our Shop
929 Grand Ave.
Phone 3-5917
PHOENIX

This is how Hoskins advertises his cooling system. These ads run in the daily papers

One of the principal reasons for the preference for warm air heat in Arizona is the fact that a sheet metal cooler can be attached, if desired, so that cold air may be blown through the ducts in summer. This is a device which, of course, cannot be fitted to any other kind of heating plant.

Most of the sheet metal contractors in Arizona make up these coolers in their shops, and install them at an average cost to the consumer of about $500 for a seven or eight room house. This includes a satisfactory profit for the contractor.

The southwestern United States

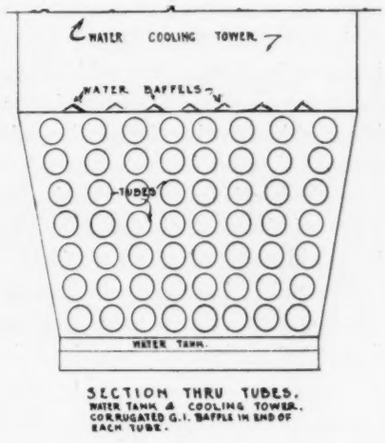
is a profitable field for this business. With summer temperatures as high as 118 degrees in the shade, a cooler for summer is almost more vital than a heater for winter.

In the South and Southwest sheet metal contractors are busy CREATING then FILLING the demand for sheet metal coolers of various types. There has been little standardization of design, each shop working out its own ideas but along the same general principle:

(1) The cheapest and simplest is simply a sheet iron boot in the casing fitted with a fan for drawing the cooler air from the basement or unexcavated portions of the buildings and forcing it through the warm air furnace ducts to the rooms above. A net, average fall of about 8 degrees is attained by this method. Not very much it is true, but as every warm air man knows, these few degrees, coupled with air motion, often spell the difference between comfort and discomfort in summer.

(2) Another type, an elaboration of the above-mentioned, is merely the application of a cooler long used in certain manufacturing operations. A "Booster" fan forces the air first through a spray of water past baffle plates and on up through the regular ducts of the building.

A drop of from 10 to 12 degrees is recorded, but this air is humid, and consequently unsuited to most sections of the United States. However, successful experiments are now being completed which have reduced the amount of moisture delivered through the ducts, and a full description of these improved coolers will be announced in a later issue of AMERICAN ARTISAN.



Looking through the air tubes. The water flows over and cools the tubes

One Phoenix, Arizona, sheet metal firm introduced into their office a novel method of advertising these coolers. Customers entering the front door of their shop look straight into the open end of a casing section with the spray and fan in place delivering a blast of cold air right into the face of the visitor. It is a silent salesman. The customer sees and feels for himself the effectiveness of the device, and the simplicity of its operation.

(3) One of the most interesting and profitable coolers is the dry air cooler illustrated herewith, perfected by the Hoskins Sheet Metal Works of Phoenix, Arizona. The Hoskins Company has been active in exploiting this department of their business. They have advertised direct to the consumer, dwelling on the advantages of a cooler from the point of view of health and comfort. They have played up the point that in houses already built and equipped with warm air furnaces, no structural alterations are necessary, as the cooler may be attached to the ducts and become an integral part of the warm air furnace.

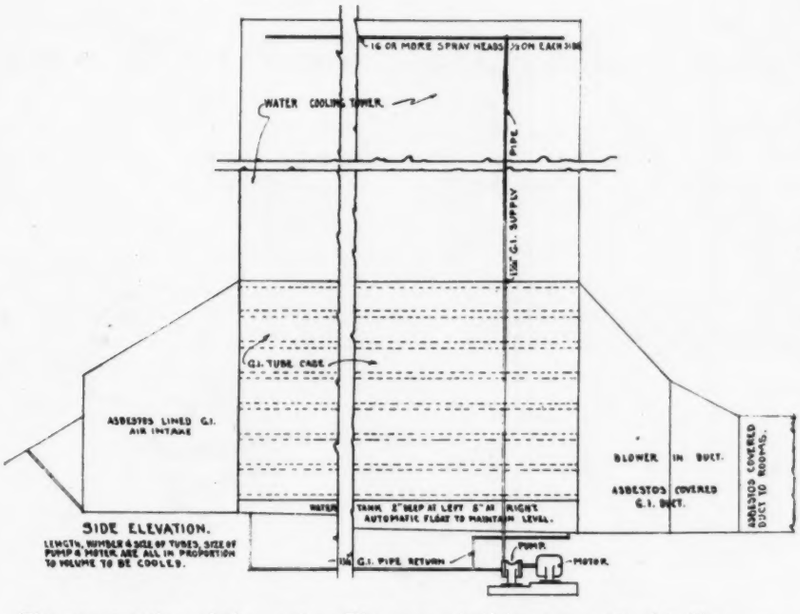
The Hoskins Company has interviewed architects and contractors influencing them to specify warm air furnaces with coolers attached, and their efforts have met with a sympathetic response, for architects and "designing contractors" are always receptive to new ideas and selling points which they in turn can use with their clients.

A typical installation was made by the Hoskins Company at the Green Frog Pool Room in Phoenix. Mr. Everett Fry, the owner of the Green Frog, says:

"The temperature of the air has been reduced approximately 18 degrees and is changed about every four minutes. I have enjoyed an increased business since its installation. Naturally I am delighted with it."

This particular installation is quite large. The entire unit is placed on the roof of the building where the air can help cool the water. In principle the unit works just like the sprays you see at candy companies, milk bottling plants, etc.

The upper part of the unit is the water cooling tower. Water is



The construction of the cooler. The upper half is composed of baffles over which the water flows. The air tubes are cased in the iron housing. Air is blown through these tubes which are cooled by the water

pumped to the top of the tower and flows down over the baffles in a spray to the sump at the bottom, where the pump picks the water up and returns it again to the top of the tower.

The drawing shows that the bottom of the unit is a large galvanized iron box built like the boiler of a locomotive. Air, instead of water, however, is blown through the tubes. The tubes are cooled by the water falling through the tower. At one end a fan is installed and the other end of the tube box is connected into the duct system of the building.

If this installation were put in a house which already had a blower system, it would be necessary to connect the cooling unit into the heating system by means of ducts which replace the furnace.

The installation can be amplified still more. In Arizona it is highly desirable to add a little moisture to the air since the air here is very dry. In other parts of the country, removal of the moisture would be desirable since there is too much moisture in most of the cold states.

In the Southwest, this moisture is added by blowing the air through a spray of water from the tower before the air is passed through the tubes of the cooler. The principle is just like that of an air washer.

The public has been educated in the last year or two to expect refrigerated air in theaters and public buildings. Large department stores which have installed cooling systems have made summer shopping a pleasure, and are reaping their just rewards in increased patronage.

But refrigerated air is still too costly for many building and home owners. This provides an opportunity for the sheet metal contractor to design and sell cooling systems like this at a fraction of the cost of refrigerated air.

Like the automobile which a few years ago was a luxury and is now a necessity, it is not too fanciful to predict that in the near future a cooler will be universally regarded as of as much importance as a heater.

One-Piece Chimney or Vent Cap

By **V. J. KOLK**
New York City

Accompanying this article is a drawing showing how one practical sheet metal man works out a pattern for a Vent Cap. We know that in New York City building owners use a lot of these caps. We like to get these short methods of making commonly used articles. Send in yours.

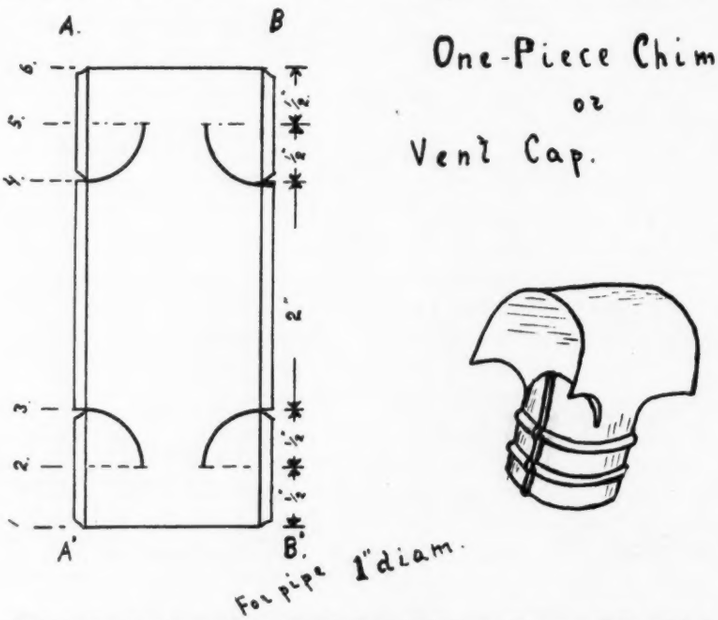
THIS simple one-piece cap can be made out of a rectangular piece of metal, without any waste.

The most convenient proportions for the sizes up to 15 inches diameter are given on the drawing herewith. The layout is a very simple one.

First measure out one-half of the pipe's circumference (the size you want to make out), add the laps for seams or riveting—this will be the width of the metal. Then mark the space 1 to 2. That is how high the round part of the cap is wanted. (On the drawing it is ½ inch.)

Now set compasses one-half of the diameter of the pipe and scribe arcs (2 to 3 and 4 to 5). Then mark off double diameter of the pipe as 3 to 4. This is the covering part—or the cap. Four to 5 is the same as 2 to 3, and 5 to 6 is the same as 1 to 8.

The arcs are cut in, the cap formed and bottom parts rounded so that A to be seamed or riveted to A′, and B to B′, giving to it the shape shown on the sketch.



This is the drawing which Mr. Kolk worked out. Can you follow his layout or do you have one you think is better?

GRAVITY EXHAUST VENTILATION

Gas and Fume Removal

By **PAUL R. JORDAN***

AS to whether or not gravity ventilators will handle fumes and poisonous gases is dependent on several conditions, chief of which is the specific gravity of the fume to be handled. If a gas is heavier than air, the problem is complicated not only by the weight of the gas itself, but by the fact that ducts must be carried down to the floor in order to get to the level at which the gas naturally lies.

Heavier than air gases cannot be depended upon to diffuse rapidly enough to make practical a dilution system of ventilation. They are naturally located at the lowest point and must be withdrawn from that point. This means that ducts must be run from the ceiling to the floor.

When ducts are run from the ventilator or from the ceiling down to the floor, the result is a curtailment of ventilator efficiency. This curtailment is not due to the long column of air because as a matter of fact the length of the column of air is not changed, the open room or the closed duct being of equal height and having from that standpoint an equal flue efficiency. Neither does duct friction enter in, to any great extent, in gravity systems. The element which puts the extra load on the ventilator is the fact that the atmosphere at the bottom of the room is the coldest in the room, while that at the top is hot. An opening at the top of the room is handling hot air, while a flue opening into the bottom of the room has to handle the cold air. In the case of top opening, cold air at the floor is pushing the warm air upward to the ventilator; and in case of a floor opening, the warm air of the room naturally rising tends to suck the cold air up with it leaving a partial vacuum with its consequent pull of the air in the flue downward. (See Fig. 1.) A ventilator which caps the flue must overcome all of these adverse conditions. A rotary ventilator in a stiff wind, will usually do that, but when the wind dies down the natural result would be a backdraft.

In handling heavier than air gases the safest plan is to use an exhaust fan, hooked up with ducts extending from the fan to the lowest point

The Paul R. Jordan Company, Indianapolis, Ind.

SHOWING DIFFERENCE IN VENTILATOR LOAD BETWEEN FLOOR OPENING AND CEILING OPENING IN FLUES

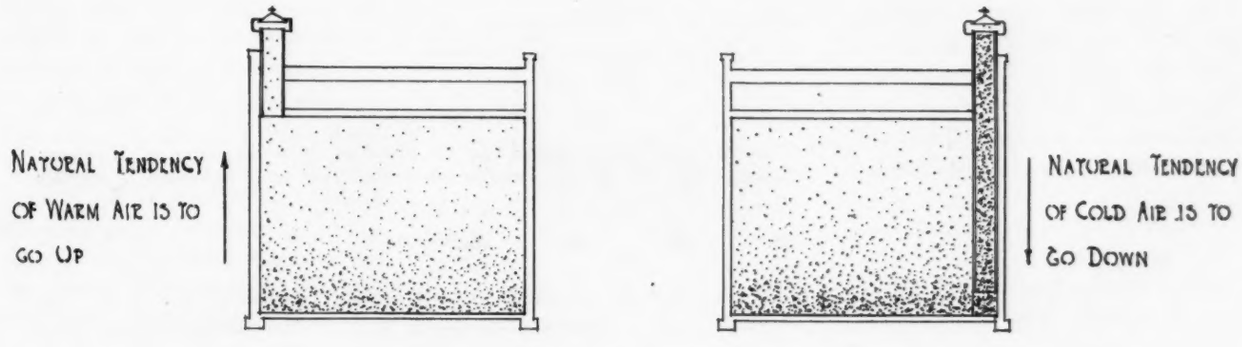
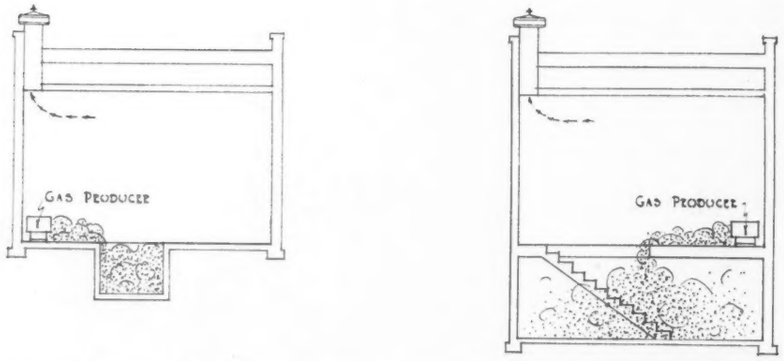


FIGURE 1.

Warm air naturally rises, while cold air, being heavier, moves down. A ventilator opening from the top of the handles warm, light air, while an opening at the bottom will handle cold air. Roughly speaking, a top opening uses a "pull," while a floor opening uses a "push"

SHOWING COLLECTION OF HEAVY GAS IN PIT AND BASEMENT WITH POORLY LAID OUT VENTILATION INEFFECTIVE



No roof ventilator, unconnected to a duct, can hope to exhaust gases from pits or basements. The gas or fumes are too heavy and the effect of the ventilator too "light"

in the room. If there are pits, the bottom of the pit must be tapped for ventilation. If there are no pits, then a flue opening at the floor in any part of the room will take care of it, unless the room is quite large and unless there are diverse air currents to be counteracted. If there is a basement it should by all means be ventilated at its lowest point. A very small seepage of heavier than air gas will gradually accumulate and fill the basement, offering an element of danger both from explosion and asphyxiation. (See Fig. 2.)

In handling heavier than air gases in any building where there is not already a large volume of air being exhausted by a high pressure fan, a low pressure fan installed in a fan ventilator is the best device to use, being most economical and most practical. (See Fig. 3.)

In the handling of poisonous fumes a good deal depends on just how poisonous are the fumes. Poisonous fumes might be classified in three categories; namely the kind which is deadly poisonous, even in small quantities, the kind which is cumulative in its effect so that a continued presence of a small quantity is harmful, and the kind that is poisonous in large quantities, but entirely harmless in small quantities. I would say generally that either of the first two types should be handled by hoods made as tight as possible and attached to fans. The third type of poisonous fume, which is the type most frequently met with, can be handled best by gravity if it is lighter than air, and best by low pressure exhaust fans if it is heavier than air. The temperature of the gas is of course a factor affecting its weight. The best kind of low pressure fan is one installed in a ventilator, or in other words, a fan ventilator.

To summarize them, the lighter than air, non-poisonous fumes can generally be handled best by gravity ventilators. Heavier than air, non-poisonous or semi-poisonous fumes can be best handled by fan ventilators; and dangerously poisonous fumes should be tightly hooded and handled by either blower type fans or fan ventilators, whichever is necessary. Most gases encountered are lighter than air, being hot.

SHOWING HEAVY GAS LAYING CLOSE TO FLOOR AND BEING DRAWN UP FLOE BY FAN VENTILATOR, BEFORE IT CAN DIFFUSE INTO THE ROOM ATMOSPHERE

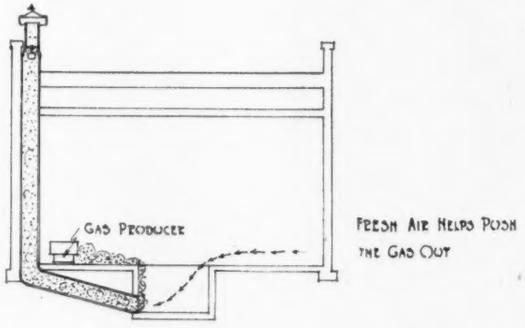


FIGURE 3.

The only way this situation can be overcome is to connect the ventilator directly into a duct which opens as low down in the pit or basement as possible

WE feel that there is a vast field waiting in ventilation work. So far as we can determine, few contractors seem to give this field consideration. The purpose of this department is to stimulate interest in and help solve problems of ventilation. If you have questions or problems, send them in. That is part of *American Artisan* reader service

RANDOM NOTES AND SKETCHES

I wonder how many of you readers remember our report on a slick trick played on visitors to some of New York state contractors. In reporting this incident we told how some of our readers were charged with more than $100 for stenographic reports of local meetings.

Here's some more information on this subject. It comes from the National Better Business Bureau, Inc., New York and shows that our industry has not been the only one imposed on. This report says:

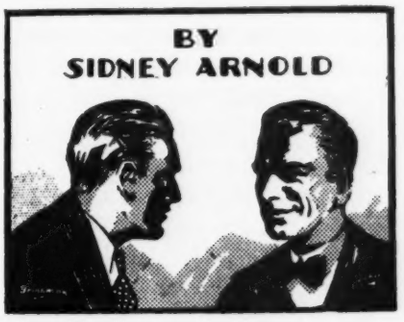
"Bankers, business executives, manufacturers and professional men have been charged amounts varying from several hundred to $4,000, because of the mail order system employed by certain stenographic reporting concerns.

"Individuals attending professional, scientific or commercial conferences of conventions are circularized and solicited to sign an order blank for a stenographic report of these conventions or hearings. An order blank is appended calling for a given number of the reports at twenty-five cents or some other price per page per copy.

"The danger to the careless buyer in this order blank lies in the failure of the solicitor to mention the number of pages in the report.

"A Detroit professional man ordered ten copies of the proceedings of his association and received a packing case containing sixteen thousand pages of typewritten matter. A Middle West banker who signed an order blank received 1,172 pages and was billed $293."

Whenever you fellows go to a convention, don't buy any reports of the meetings without knowing EXACTLY what you are buying.



Impossible?

"Hey, Mike," said one tinner to the other atop a house, "don't come down the ladder on the north corner, I took it away."

We have not enough pages as yet to conduct a department announcing new arrivals in the families of our various friends, so I'll have to announce the arrival of a new son, Phillips Frederick, in the home of Fred Sauereisen of Technical Products Company, Pittsburgh. Congratulations, but if Fred wants anything further added to this, he had better do it himself.

* * *

A furnace installer from Florida and one from Alaska were bragging about the respective merits of their home surroundings. They had drawn even on the climate, the skyline, the beautiful women and all the rest of it. At last the Floridan ventured in desperation:

"You just ought to see our mosquitoes! Big as your thumbnail."

"Yeah?" inquired the Alaskan. "Well, you know the difference between a Florida and an Alaska mosquito? An Alaska mosquito has got a white spot between its eyes as big as your fists."

F. R. Bissell of the National Super Service was in the office the other day. He brought a lot of good news and some which was not so good. However, we will keep the bad news to ourselves, but we won't be stingy with the rest of the information.

One of the things Mr. Bissell emphasized is, as he sees it, the need for more merchandising sense by heating men. Darned if I don't agree with him. Now, I'd like to quality that by saying that merchandising sense does not stop at getting such equipment as a cleaner and getting all set to a big business.

Merchandising sense means that AFTER you have the necessary equipment you have to know what to do with it. It's not getting all set to do something as much as it is to actually go out and do it. Every one of us could do with a whole lot more of that go-get-um spirit.

* * *

The other day I was out scouting around for a bit of information—which, by the way, I didn't get—when I ran into a contractor who said he would like to get some information about painting furnaces. It seems that he had read about painting and tried it out on a couple of furnaces. He used ordinary house paint and as soon as the furnace got hot all the paint turned black. He wanted to know what I knew about it, and I said I didn't know as much as I should, but that probably the editor did. But the editor was out when I wrote this, so I'll ask you and surprise the ed when he gets back. If any of you fellows have had any experience with this sort of work, drop me a line, privately, and perhaps I'll know something soon.

Warm Air Register Shields

From Wheaton Sheet Metal Works, Wheaton, Illinois.

From Hagen Hardware Company, Chicago, Illinois.

Can you tell us who makes warm air register shields?

Ans.—Beh and Company, 1140 Broadway, New York City; The Hall-Neal Furnace Company, 1322 North Capitol Avenue, Indianapolis, Indiana, and Gem Metal Shield Company, Dayton, Ohio.

"Regent Master" Circulator

From Ross Furnace and Repair Company, Sandusky, Ohio.

Please tell us who makes the "Regent Master" circulator.

Ans.—The Regent Stove Company, Wyandotte, Michigan.

Louvres for Doors of Apartment Buildings

From Sheet Metal Engineering Company, Chicago.

We should like to know who manufactures louvres for doors of apartment buildings.

Ans.—The Ventilouvre Company, First National Bank Building, Bridgeport, Connecticut. *Chicago Agent*: Howard Evans, 1314 Builders Building.

Metal Ornaments

From Klentzer and Klentzer, Fowler, Indiana.

Kindly inform us who makes urns, statues and ornaments, either sheet metal or cast iron, for use in park decorations.

Ans.—Friedley-Voshardt Company, 733 South Halsted Street, Chicago, Illinois; Gerock Brothers Manufacturing Company, 1252 Vandeventer Avenue, St. Louis, Missouri; and Miller and Doing, 60 York Street, Brooklyn, New York.

Wood Burning Furnace

From Standard Foundry and Furnace Company, De Kalb, Illinois.

Please tell us who makes a horizontal wood burning furnace that will handle long lengths of wood.

Ans.—The Meyer Furnace Company, Peoria, Illinois; Keith Furnace Company, Des Moines, Iowa; Ramey Manufacturing Company, Columbus, Ohio, and L. J. Mueller Furnace Company, Milwaukee, Wisconsin.

"Anaglypta" Plaster Relief Ceilings

From Mr. Foy, Chicago Chamber of Commerce, Chicago.

I should like to know who manufactures "Anaglypta" plaster relief ceilings.

Ans.—W. H. S. Lloyd Company, New York City.

"Miller" Rubber Mallet

From America Heating and Supply Company, Rockford, Illinois.

Can you tell us who makes the "Miller" tinners rubber mallet?

Ans.—Miller Rubber Company, Akron, Ohio.

Letters Cut Out of Flat Plates

From George Bishoff, Marinette, Wisconsin.

Please refer me to a firm who can stamp letters out of flat plates.

Ans.—Grand Sheet Metal Works, 920-938 West 19th Place, Chicago.

"Farquhar" Furnace

From C. W. Hubertz, Corry, Pennsylvania.

From Mr. Irwin, 100 West Monroe Street, Chicago.

Please tell me who makes the "Farquhar" furnace? Have they a Chicago distributor?

Ans.—Farquhar Furnace Company, Wilmington, Ohio. Chicago distributors are: Columbia Sheet Metal Works, 5252 West Division Street.

Chimney Testing Instruments

From Leo A. Tilford, Jackson, Michigan.

I should like to know who makes chimney testing instruments.

Ans.—Ellison Draft Gauge Company, 214 West Kinzie Street, Chicago; E. Vernon Hill Company, 121 North Clark Street, Chicago, and The Hays Corporation, Michigan City, Indiana.

Furnace Fire Clay Brick

From Banks-Coleman Furnace Company, Fort Wayne, Indiana.

Please give me the names of firms making furnace fire clay brick.

Ans.—Chicago Firebrick Company, 1461 Elston Avenue, Chicago; W. S. Dickey Clay Manufacturing Company, Kansas City, Missouri; Plibrico Jointless Fire Brick Company, 1800 Kingsbury, Chicago; Rutland Fire Clay Company, Rutland, Vermont, and Williams Stove Lining Company, Taunton, Massachusetts.

Skylight Gearing Devices

From J. M. Holstner, 2621 West Main Street, Louisville, Kentucky.

I should like to have the names of manufacturers of skylight gearing devices.

Ans.—American Skylight Company, 2617 Fletcher Street, Chicago; Blaski Manufacturing Company, 4132 Belmont Avenue, Chicago; Danzer Metal Works, Hagerstown, Maryland; David Levow, 308 West 20th Street, New York City; Park City Cornice Works, Inc., 46-52 McKinley Avenue, Bridgeport, Connecticut, and Payson Manufacturing Company, 2916 W. Jackson Boulevard, Chicago.

Second-Hand Squaring Shears

From C. Engels & Sons, Mayville, Wisconsin.

Where can we secure 30 or 36 inch second hand squaring shears?

Ans.—Interstate Machinery Company, 601 West Monroe Street, and Maplewood Machinery Company, 2638 Fullerton Avenue, both of Chicago.

Waterproofing for Basement

From H. C. Durham, Waco, Texas.

Who makes waterproofing for a basement that leaks?

Ans.—Lastik Products Company, Oliver Building, Pittsburgh, Pa.

"Globe" Ventilators

From Quaker Manufacturing Company, Chicago.

We should like to know who makes the "Globe" ventilators.

Ans.—Globe Ventilator Company, Troy, New York.

ASSOCIATION ACTIVITIES

Cincinnati Organizes for Joint Coal and Heat Effort

Never in the history of Cincinnati's allied coal and heating industries has there been such a gathering of kindred spirit and such a complete meeting of minds as occurred at the November 14th conference of the heating equipment interests, including manufacturers of both boilers and furnaces, builders, architects, master plumbers, together with the coal and coke producers and marketers. This initial meeting was sponsored by the Coal and Coke Merchants' Association of Cincinnati.

Lorin W. Smith, Jr., sales promotion manager of Combustioneer, Inc., Goshen, Indiana, and secretary of the Committee of Ten—Coal and Heating Industries, discussed the national development under way between the industries represented at the meeting.

It was explained that this important movement started early in 1930 by national organizations, to provide a definite co-ordinated plan of constructive activity between these nation-wide groups.

The definite organization of the Committee of Ten was accomplished in Chicago in May of this year, providing for a plan whereby these industries as represented in individual communities could profit individually through the concerted national movement.

The entire range of communal interests was discussed, and every conceivable angle relating to work and activities by and between heating equipment industries and coal and coke producers was subjected to analytical criticism. Leaders of every branch of the local coal and coke and heating industries presented their views and practically every person voiced his opinion—all in the affirmative—as to this or that phase of co-ordinated action as it might be applied in Cincinnati.

The net result of this meeting was the unanimous adoption of a resolution which will lead to the organization of a permanent committee which will formulate and check plans for the translation of the numerous suggestions made at the meeting into definite results.

The ultimate result of this local movement will mean co-ordinated activity of local coal, coke and heating interests to provide the public with automatic "heat satisfaction" from the proper use of coal—the fundamental, economic fuel.

Sufficient progress may be made within the next two weeks to permit inviting several outstanding members of the national organization known as the Committee of Ten to participate in a meeting that may be held in Cincinnati the early part of December.

Chicago Ass'n Ladies Hold Card and Luncheon Meet

The Ladies Auxiliary of the Sheet Metal Contractors' Association met at the home of Mrs. Louis S. Rysdon, 6943 Perry Avenue, on Thursday, November 6th, 1930. Mrs. G. Clark, Mrs. F. Graebka, Mrs. K. Hirsch, Mrs. J. Maiers, Mrs. A. B. Rysdon, Mrs. L. S. Rysdon, Mrs. G. Strom, Mrs. A. Sykes, Mrs. J. Thompson, and Mrs. A. J. Wagner were the members present. After a delightful Autumn-time luncheon, cards were played and three varied colored embroidered aprons were won by Mrs. Sykes, Mrs. Strom, and Mrs. A. B. Rysdon. The party was agreed by all to be a big success and the next one is being anticipated.

Many Issues Discussed at Detroit Committee of Ten Meeting

One of the outstanding developments in the history of the coal and heating industries reflected itself in the Thirteenth Annual Meeting of the National Coal Association held in Detroit, Michigan, October 15, 16 and 17, in that the Committee of Ten—Coal and Heating Industries movement was the main topic of discussion.

In the regular morning session prior to the meeting of the Committee of Ten, comments were made by Walter Barnum, chairman of Market Research Institute of National Coal Association, with reference to the Committee of Ten as it effected the coal operators.

Following Mr. Barnum, H. A. Glover, chairman of Trade Relations Section, Market Research Institute, explained the functions of the Committee of Ten and results that had been obtained to date.

The viewpoint of the warm air industry as effected by the Committee of Ten was very ably presented by E. B. Langenberg. Commenting on heating service, Mr. Langenberg emphasized the fact that this was the first time in the history of the American industry that this great industry had met in a conference looking toward mutual help, and that movement now started would make possible a definite co-ordinated activity between the coal and heating operators.

E. L. Beckwith, president of the Midwest Stoker Association, explained the formation of the Midwest Stoker Association and its aims and hopes for the future.

Milton E. Robinson, Jr., president, National Retail Coal Merchants' Association, referred to what the Committee of Ten movement might mean to the retail coal dealers of the country.

The first new business brought up at this meeting was the proposed constitution and by-laws governing the Committee of Ten—Coal and Heating Industries. It was decided to carefully analyze these and pass on same at the next regular meeting.

The Committee of Joint Service reported as to their outline of activities and the Publicity Committee reported on the extensive publicity given the Committee of Ten movement in numerous trade publications—both in the coal and heating industries—and outlined plans for the greater dissemination of news and publicity in the future.

At the invitation of President J. M. Triggs of the National Warm Air Heating Association, Chairman Glover of the Committee of Ten agreed to appear before the National Warm Air Heating Association Annual Convention to present developments of the Committee of Ten.

NEW ITEMS *and* NEWS ITEMS
From and about the Manufacturers and Jobbers

Stanley Tool Company Announces Two New Drills

The development of two new 3/16-in. Electric Drills has just been announced by the Stanley Electrical Tool Company. They are production drills, weighing only 3¼ pounds and are only 8¼ inches long. They are particularly adapted for working in places hard to get at—in automobile, airplane assembly, furniture construction, etc.

The difference in the two drills is in the housing. No. 361 has an aluminum alloy housing not liable to damage if dropped. The housing of No. 361B is

made of a special composition that insulates against heat, making it a comfortable tool to handle when drilling continuously for long periods.

The special features enumerated by the manufacturer are: Armature shaft supported on large seal type ball bearings; no side play at chuck spindle because radial ball bearings are used on each end of spindle; handle can be quickly taken off or put on as required; the gears are nickel steel specially heat treated; quick make and break line switch; 12½ ft. of rubber covered cable; Universal motor; chuck speed with no load is 3000 R.P.M., full load 2000 R.P.M. Can be furnished for either 32, 110, 150, 220 or 250 volts as specified.

New Handbook of Domestic Oil Heating Soon Ready

A new edition of the "Handbook of Domestic Oil Heating" published by the American Oil Burner Association, will make its appearance about January 1, it is announced by Harry F. Tapp, executive secretary of the Association. The last edition, which was compiled and edited by Mr. Tapp, was published two years ago this month.

The new handbook will cover commercial and industrial installations as well as domestic installations, Mr. Tapp said.

Carrier, Brunswick and York to Promote Air Conditioning

Merger of the Carrier Engineering Corporation of Newark, N. J., the Brunswick-Kroeschell Company of New Brunswick, N. J., and Chicago, and the York Heating and Ventilating Corporation of Philadelphia, each one of the largest concerns respectively in the air conditioning, refrigerating, and unit heating and ventilating industries has just been announced. Including subsidiary and affiliated concerns, the merger will unite fifteen companies, five of them foreign, with total assets of approximately $15,000,000.

"The consolidation will provide a single world-wide organization equipped to provide any desired kind of indoor atmospheric conditions in homes, hotels and apartment houses, stores, theatres, office buildings and industrial plants," J. I. Lyle, executive vice-president of the Carrier Corporation, stated in making the announcement.

"Air conditioning and refrigeration have been two of the fastest growing industries in the country, and heating and ventilating has entered a new and expanding phase. Each of the three companies has had its own specialized field, but their respective research, engineering, manufacturing, sales and service facilities supplement one another admirably. The merger plan contemplates that the fifteen companies involved will retain separate entities under a holding company to be known as the Carrier Corporation."

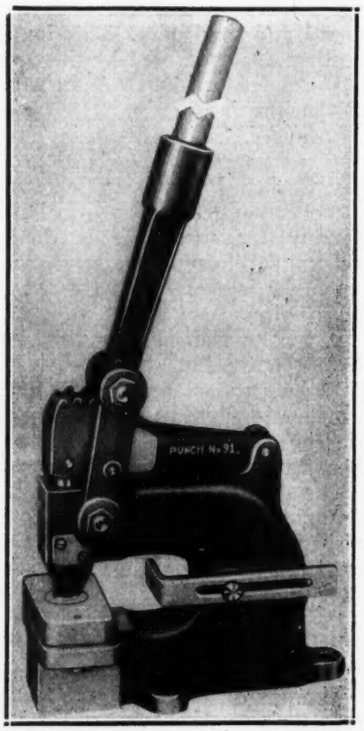
The Carrier Engineering Corporation was founded in 1914 by Willis H. Carrier, J. I. Lyle, E. T. Murphy, and five associates who had worked with them in the Buffalo Forge Company.

The Brunswick-Kroeschell Company is the outgrowth of the merger in 1922 of the Brunswick Refrigerating Company of New Brunswick, N. J., the Kroeschell Brothers Company, and the Kroeschell Brothers Ice Machine Company of Chicago. It has plants in both cities and maintain a complete line of commercial refrigerating machines for every cooling or freezing requirement. J. W. Johnson is president and Sydney B. Carpender is vice-president and general manager.

Whitney Mfg. Co. Announces New Bench Punch

The new No. 91 Bench Punch shown in the accompanying illustration, is the latest addition to the W. A. Whitney Manufacturing Company's line of Lever Punches. This machine embodies the principle of their well known Whitney No. 2 Punch, of which there are over 50,000 in actual use.

It has a rated capacity of 5/8-inch hole through ¼-inch plate, 1-inch hole



through 3/16-inch plate and 2-inch hole through ⅛-inch plate. Stock sizes of punches range from ⅛ to 2 inch. Three sizes of interchangeable, self-aligning bolster plates are the means by which this range of holes is obtained.

A special feature of this Punch is the Notching Punch and Die which is sold as an accessory, and which cuts a 90 degree notch in angle iron up to 1½x 1½x⅛ inch.

All parts are made from drop-forgings, except the Jaw, which is a Chrome-Nickel Steel Casting.

The W. A. Whitney Mfg. Co., Rockford, Illinois, invite requests for complete information and prices

Premier Issues New Catalog Describing "E Series" Premier

The Premier Warm Air Heater Company of Dowagiac, Michigan, have just issued a new catalog of which they are justly proud.

The new Premier Catalog completely describes and illustrates the new 1930 Model "E Series" Premier DeLuxe Heater which the company puts into production this last year. Interesting innovations of design and construction which have been developed in the company's testing department during the past few

years are fully treated in the 24 pages of the new issue.

The catalog not only describes the line of Premier Heaters, but is also a manual on warm air heating in general. Many suggestions to the man building a home are made in the catalog and a prospective purchaser will get a very clear picture of the many factors which must be taken into consideration in buying a warm air heating plant.

It is attractively printed in two colors throughout while the cover is a deep rich gold. An outer cover of waxed tissue is printed in gold, effectively setting it apart as an unusual piece of printed matter. Copies of the new Premier Catalog may be obtained by writing the company.

Inland Steel Co. Announces "Perfect Drain" Roofing

Inland Steel Company, 38 South Dearborn Street, Chicago, announces the addition of another roofing sheet to its line of products, "Perfect Drain" Channel Roofing. This roofing embodies what is said to be a new principle in protection, providing a triple barrier against water. This feature, it is claimed, makes this roofing absolutely watertight against the severest rainstorms. It cannot be laid incorrectly and is equally effective for siding as well as roofing factories, freight houses, storehouses, sheds, barns, etc. Made of Inland Open Hearth Steel, it is galvanized for durability.

Enterprise Boiler Works Offering Book, "Welding vs. Riveting"

"Welding vs. Riveting" is the title of an interesting 12 page (and cover) booklet being distributed by the Enterprise Boiler and Tank Works, Chicago, manufacturers of the Pure-Air Welded Steel Furnace. The booklet is an interesting brief in behalf of the welding process employed by this company.

Brundage Co., Kalamazoo, Offers Blower Literature

The Brundage Company, Kalamazoo, Mich., have announced their new N-Series Non-Damper type furnace blower for straight mechanical circulation of air. This new blower is featured in the company's current literature and advertising.

The blower, with the exception of the elimination of the damper is almost identical with the D-Series blower.

The Brundage System is a blow-through system. It creates a pressure in

the furnace warm air jacket. As a result, it eliminates any chance of sparks or smoke being drawn from the fire pot through the warm air piping and out into the rooms.

The fans are of the centrifugal type. They are positive in action, delivering ample warm air to all parts of the home, factory, public building or garage.

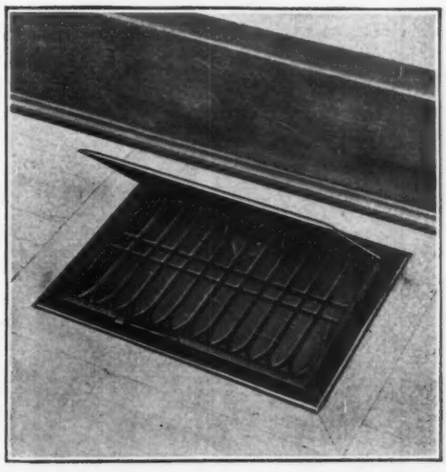
The fans are silent in operation, because of their slow speed and because of the sound proof lining which deadens all sound that might possibly be transmitted by metal-to-metal contacts.

When gravity circulation of warm air through the heating system is fully adequate, the Brundage System in no way interferes with normal movement of air through the building. When the fans are shut off the dampers automatically swing to open position, permitting uninterrupted circulation. The fan chamber is lined throughout with insulating board which absorbs vibration noises instead of transmitting them.

The Brundage unit is extremely compact, only 33 inches from front to back and can be installed satisfactorily and without difficulty beside practically any warm air heating plant made.

The Brundage system is offered in sizes to meet all requirements. There is a model suited to all sizes of structures, from a small house to the largest store, theatre, factory or public building. The equipment furnished consists of the patented dampers, sheet metal damper casing, fan, motor, and V-belt drive. Also, if desired, the sheet metal boot connection to the furnace can be furnished.

General Products Co. Announces Register with Deflector



The General Products Co., 3607 Orchard Avenue, Indianapolis, Ind., register manufacturers, have recently announced a new type of floor register with a "deflector" shield for directions bent toward the center of the room and which serve as a protective covering when the heating plant is not operating.

Armco Announces New Executive Appointments

President Charles R. Hook of The American Rolling Mill Company recently announced the appointment of A. K. Lewis, works manager of Armco's Butler, Pa., plant, as Assistant Vice-President, succeeding the late M. E. Danford, who died suddenly in July while on business in England. He will be located in Armco's general offices in Middletown.

Mr. Lewis joined the Armco organization as chief draftsman back in 1910. In 1923 he became the director of personnel, and served until September, 1927, when he became works manager at Butler.

Harry Holiday succeeds Mr. Lewis as works manager. He is at present general superintendent of the plant.

Mr. Holliday is a graduate of Carnegie Institute, and has had many years of experience in coke plant, blast furnace, wheel works, and wheel sales.

This book, prepared by the Trade Development Committee of the National Sheet Metal Contractors' Assn., represents years of effort in its compilation and is authoritative and complete.

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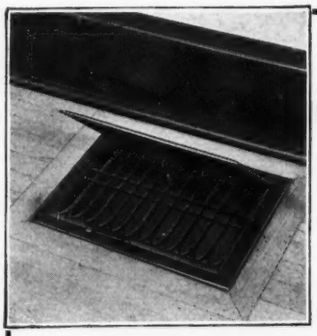
AMERICAN ARTISAN

139 North Clark Street Chicago, Ill.



SOMETHING

New

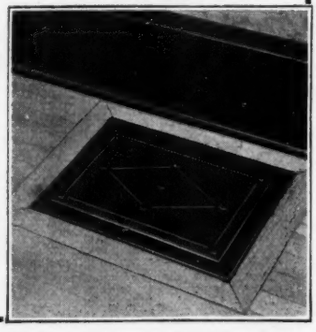
DIFFERENT ATTRACTIVE PRACTICAL EFFICIENT

DEFLECTO

FLOOR REGISTERS

New beauty, greater free air capacity. An efficient register plus a shield which protects walls. An ornament to any room —does not become dust laden as it has no shutters.

The MOROCCO finish is specially made for the DEFLECTO REGISTER. This finish is unlike any other register finish. DEEP BLACK, OAK BROWN, DARK GREEN and MOTTLED BRONZE are stock colors. Simple practical adjustment. When open the shield is protected by a spring support.



Write today for full details and circulars

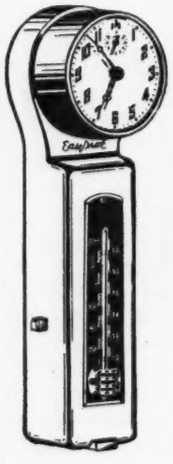
JOBBERS WANTED

GENERAL PRODUCTS CORP.
3607 Orchard Avenue Indianapolis, Ind.

Is YOUR Home

Equipped for Cold-Morning Warmth on Arising? And Complete Upstairs Control of Your Furnace Drafts at All Times?

$10 Retail and has no Competition



30-DAY FREE-TRIAL OFFER to all rated Sheet-Metal and Furnace men who are not at present enjoying draft-control service in their own homes!

Prove the remarkable sales-rightness of "Easy-Draft," Mr. Furnace Dealer, by using it in your own home at our risk!

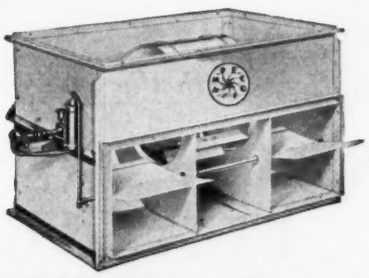
A phenomenal seller that is going over big wherever it is introduced. For Steam, Hot Water or Warm Air Furnaces. Not a thermostat—no electrical connections to bother with — easy to install — trouble-proof in operation — approved by Good Housekeeping Institute — marketed on iron-clad Money-Back Guarantee.

For Descriptive Literature and full particulars about this Special "Free-Trial" proposition, address

CHARLES TISCH, Inc.

93 Rockwell Place Brooklyn, N. Y.

Say you saw it in AMERICAN ARTISAN—Thank you!



This Blower Gets YOU the Business

—the last word in forced air circulation

HERE'S the only blower that positively provides a **fully-balanced** distribution of air to both inlets —vital to proper blower operation. The improved **Ampeco Rotary Blower** assures positive and uniform heat delivery. Mechanical control; quiet; non-leaking ring oil bearings; low priced; a tremendous business-getter and money-maker for the live dealer.

Built with or without dampers which open automatically when the blowers stop, permitting gravity circulation. Get your share of this profitable forced air business. Write for literature and full information today.

AMERICAN MACHINE PRODUCTS COMPANY
Marshalltown, Iowa
For 15 Years Manufacturers of **Precision** Products

AMPECO BLOWER

Let Us Help You Sell Heating Efficiency!

IT'S difficult to sell a quality job without an efficient furnace, nor would you want to. When you sell heating efficiency, as more and more dealers are doing with satisfying and profitable results, you don't handicap yourself with an inadequate furnace.

In fact, it cannot be a truly efficient installation without an equally efficient furnace and the distinctive features of

THE PIPE AND ATH-A-NOR PIPELESS FURNACE

SMOKELESS

will prove a decided asset to you in attracting the class of home owners who are interested in genuine heating efficiency.

Distinctive features of the Ath-A-Nor Smokeless include the exclusive three way blast and the economy and cleanliness afforded by the smoke consuming design.

Besides the Ath-A-Nor the May-Fiebeger line includes several other styles and a complete range of sizes in both cast iron and steel furnaces. Every May-Fiebeger furnace is high grade and reasonably priced.

THE MAY-FIEBEGER COMPANY
NEWARK ~ ~ OHIO

A-C Thermostatically Controlled *Automatic* **HEAT BOOSTER**

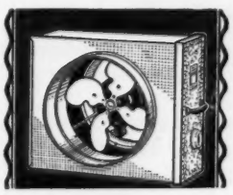
will improve the efficiency of any warm-air heating installation—old or new!

THIS fan is quiet, efficient and powerful, and can be quickly adapted to any furnace installation by using an elbow or two and a couple of lengths of pipe—no expensive changes in the piping system. It effectively accelerates the movement of air and the Mercury Switch control makes it fully automatic—a feature not found on any other fan near the A-C price.

You can greatly improve the heating efficiency of existing installations in your community and insure the efficient circulation of warm air (cool air in summer) by installing the A-C Automatic Heat Booster.

The No. 9 size Unit with 10 inch air outlet, is designed for small homes. Equipment includes Mercury Control, Heat Booster, Fan and Unit Housing complete and ready to install for only (to the dealer)..... $36

No. 12 with 12 inch fan and 14 inch opening, $48.00.



Order from your jobber or write direct for complete details

A-C MANUFACTURING COMPANY
417 Sherman Avenue ~ ~ Pontiac, Illinois

"Old Wine in New Bottles"

Replace Those Obsolete and Worn Out Heating Plants with the Improved

LONDON BOILER PLATE **FURNACES**

They Are Cold Riveted and Welded Smoke, Gas and Fume Tight

They Have *Balanced Heat Surfaces* Which Mean *Efficiency* and *Economy*

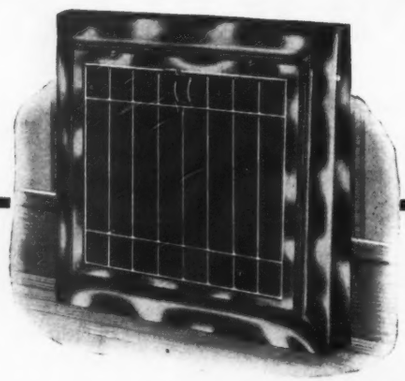
Are Equipped with Either Duplex Basket Dump, Triangular or Draw-Center

GRATES AND **RADIATORS**

FOR SOFT OR HARD COAL, COKE OR OIL

THE LONDON FURNACE CO.
LONDON, OHIO
THOS. W. PEARSON—*Sales Manager*

They Cost No More Than the Troublesome Kind. Prompt Shipment Guaranteed.



Streaking of walls is ABSOLUTELY PREVENTED by the expanding joint which connects the register face and register box. This is an exclusive and guaranteed feature of the

NO STREAK **REGISTER**

Write for illustrated catalog and price list

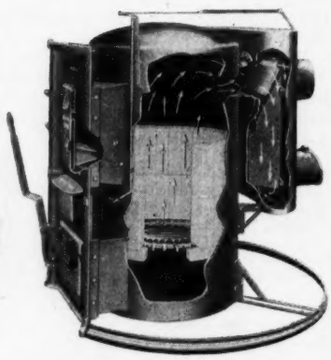
ROCK ISLAND REGISTER CO.
Rock Island, Ill.
Please send me your catalog and price list.
Name.....
Address.....
Town..... State.....

Every Warm Air Heating Man Will Find the Information Contained in This Booklet Vitally Interesting

IT tells WHY our steel warm air furnaces are DOUBLE ARC WELDED—INSIDE AND OUTSIDE.

It PROVES with figures, charts and test results that our DOUBLE WELDING makes 100% efficient joints.

The booklet is FREE just ask for it—

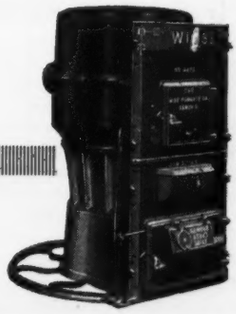


Pure-Air Warm Air Furnace

ENTERPRISE BOILER & TANK WORKS
1955 North Long Ave. **Chicago, Ill.**

Say you saw it in AMERICAN ARTISAN—Thank you!

3 Types of Quality Furnaces From One Manufacturer.....WISE



WISE OPEN DOME CAST FURNACE

THE Wise 40 Series Open Dome is the highest grade furnace of this type made. It has a new cellular one-piece firepot which supplies an evenly distributed air blast, providing complete combustion.

It has an Elbow Shaped Flue Collar on the inside of the radiator turned up so the heat within the radiator *must* follow the castings to the top before entering the flue. Notice the heavy castings, ribbed firepot, shaker handle and correct design.

NEW WISE STEEL FURNACE

THE Wise Steel Furnace has all the features found on the better steel furnaces, including a riveted and welded body of heavy steel with large radiating surfaces. ***Its exclusive feature is in the radiator design which eliminates the big weak spot in other steel furnaces.*** Notice the cast iron soot box and clean-out at the bottom of the radiator.

WISE 20 SERIES CAST FURNACE

BESIDES all the ordinary up-to-date features the Wise 20 Series Return Flue Radiator Type Furnace boasts an exclusive Patented radiator construction which eliminates the objectionable dirt collecting and clean out nuisance of the ordinary flue types. Feed chamber and top radiator are constructed to allow communication between them bringing the opening of the fire flues of the radiator directly into the feed chamber.

Wise dealers have profited and satisfied their customers with Wise furnaces for over thirty-seven years. Write for catalog No. 23 which illustrates these three quality furnaces in detail.

Progressive dealers in open territories can secure valuable exclusive agency—ask about it NOW!

The WISE FURNACE COMPANY . . . AKRON, OHIO

In Winter? Sure! Clean Them Any Old Time

Our one-man outfit makes low overhead

EVERY WINTER DAY dealers are cleaning furnaces. Many were not cleaned last fall —they are choked now and wasting good coal. The owners will pay *you* to stop that waste *if you tell them about it.* There's good money cleaning in winter.

And the furnace business behind the cleaning! Replacements—repairs—and new furnace prospects —develop in winter. The man with a cleaner sells them because he sees them first.

Ask us how they do it.

With our free Plan Book and a Super Suction Cleaner you too will gather in many extra dollars this winter. Ask for your copy today.

THE NATIONAL SUPER SERVICE CO.
1944 North 13th Street Toledo, Ohio

WAMPUM BRAND LASTIK FURNACE CEMENT

meets all the requirements of a truly superior furnace cement—

It is odorless, soft, pliable, smooth and easy to pack. It becomes hard under heat but will not crack. It is a non-porous, firmly knit and acid-proof. It does not shrink or swell. A furnace properly set with Lastik withstands the extremes of expansion and contraction to which it may be subjected and gives years of gas-tight service.

Cement one furnace with* Wampum Brand Lastik Furnace Cement *now and let it prove itself. Your jobber will supply you.

Send the coupon today—

LASTIK PRODUCTS CORPORATION
Oliver Building, Pittsburgh, Pa.

Gentlemen:—
I am interested in Lastik Wampum Brand Furnace Cement. Send me full details.

Name.....

Address.....

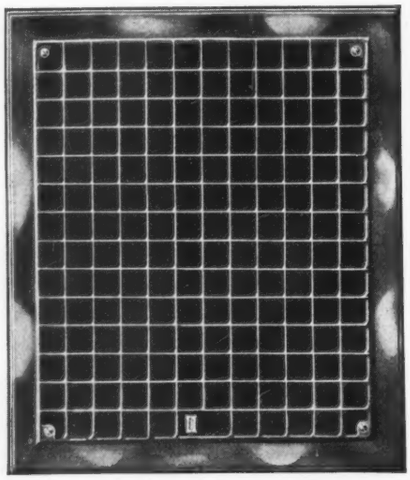
My Jobber is.....

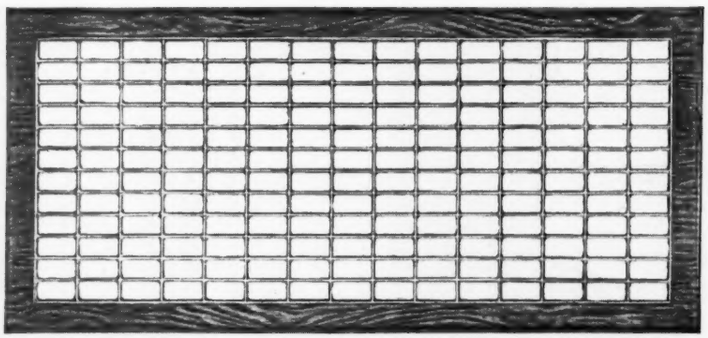
THAT SATISFIED FEELING–

of knowing Your Dollars have done Their BEST is experienced when ordering

U. S. STEEL FLOOR REGISTERS

with deeply embossed bars, supplying more than required capacities. They retain the lattice design. Instead of oval corners in the perforations—these are clean cut and square because of the superior grade of steel which does not crack and break.





Made in ALL finishes. Our Oak Grain Finish on floor registers is a SENSATION and a national SUCCESS. Try it on your next order.

OR U. S. SPECIAL STEEL FACES (Above)

Better, stronger, more durable than wood. Finished in Oak Grain—matches perfectly. In lacquered antique (LBAB) blends beautifully with surroundings. Strongly reinforced. Ask the FURNACE MAN who has weathered the storm through to SUCCESS.

Write for our latest Catalogs

UNITED STATES REGISTER COMPANY

General Offices: BATTLE CREEK, MICHIGAN

BRANCHES: Minneapolis, Minn.; Kansas City, Mo.; Albany, N. Y.; Denver, Colo.; Seattle, Wash.; Portland, Ore.; San Francisco, Calif.; Marshalltown, Iowa; Syracuse, N. Y.

MIDLAND

Offers—

Quick service on four complete lines of riveted gas tight steel furnaces—El Capitan—El Dorado—Truesteel—Ben Franklin.

A complete advertising and merchandising service that will fit your business.

An engineering service that is practical and always at the command of Midland Dealers.

A desirable and convenient time payment plan that is bound to increase your sales.

MIDLAND FURNACE CO.

COLUMBUS, OHIO

"Yours for Cleaner Heat"

VERNOIS *Circulators and Gas Ranges*

are of the same high quality as the Vernois furnace. With these you can cash in on the steady demand for room heaters and gas ranges in addition to your furnace business.

Write for particulars

Mt. Vernon Furnace & Mfg. Co.

Mt. Vernon, Ill.

File This Copy

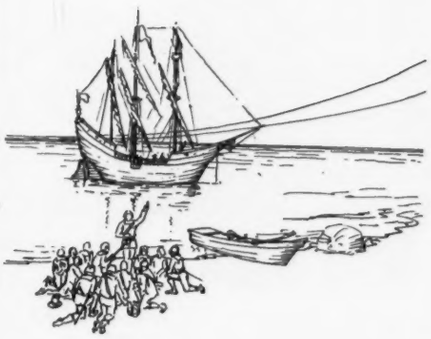
When you have finished reading this issue of AMERICAN ARTISAN, pass it on to others in your organization, marking the articles in which they should be particularly interested.

Then file it for future reference. You never know when you will encounter a problem in your business that is covered in this very issue.

Say you saw it in AMERICAN ARTISAN—Thank you!

Be Thankful for

RYBOLT FURNACES



With RYBOLTS you can offer your furnace prospects an improved, quality, dependable heating system at a competitive price. That is why RYBOLT Dealers have consistently . . . year after year . . . increased their sales and profits.

And if you are interested in selling building contractors and other quantity users of quality furnaces, we have a mighty attractive proposition that enables you to obtain this volume business. Write for the facts—Now!

THE RYBOLT HEATER COMPANY — *Ashland, Ohio*

CINCINNATI INDIANAPOLIS

A Heat Hustler Fan Forces Air Through a Single Warm Air Pipe

Heats garages, sun porches and other rooms that will not heat by gravity. Mounts directly in the warm air pipe. Draws heat from the furnace and forces it into the hard-to-heat room. Quick heat for a bathroom.

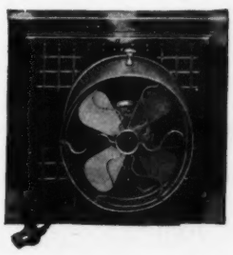
Four reasons why you should use the American Heat Hustler:

1. It uses a positive pressure, rotary type fan.
2. Motor is outside the warm air flow, adding greatly to life of motor and leaving as much space for gravity air flow as before the Heat Hustler was installed.
3. It is quiet.
4. Furnished for either automatic or manual control.

Price list, with descriptive literature showing different models, sizes, etc., will be sent you by return mail upon receipt of your request. CLIP AND SEND THIS AD IN NOW!

AMERICAN FOUNDRY & FURNACE COMPANY

Bloomington, *World's largest manufacturers of blower furnace systems* **Illinois**



The Robinson Every Duty Portable Fan as It Appears Hanging on a Wall or Baseboard Register. Fan Can Be Carried from Room to Room. . . . Can be Used for Ventilating in Summer.

For that Hard to Heat Room—

try a ROBINSON Every Duty Portable Fan

Sucks warm air from the furnace and forces it into room. Just the thing to straighten out that installation with one hard to heat room. Fine for hustling heat to certain rooms on cold nights.

Ask Your Jobber

Send for Literature Today!!

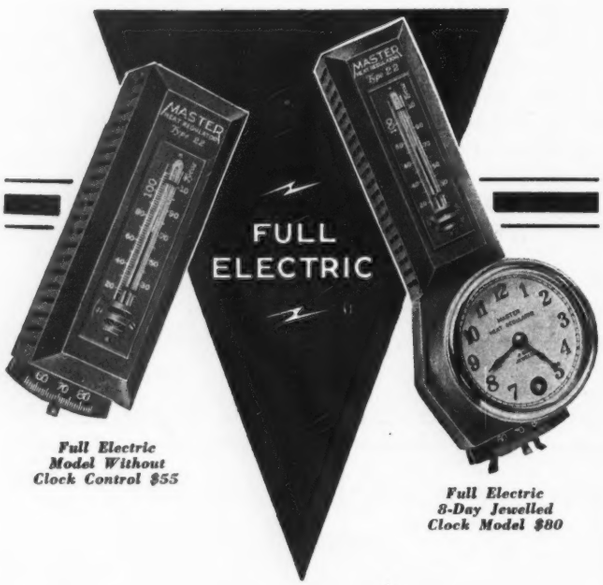
A. H. ROBINSON CO., MASSILLON, O.

The Robinson Every Duty Portable Fan Can Be Used on Either a Floor or Wall Register. Weighs only 8 Pounds Packed. Painted Green. Sent Parcel Post.

Mention AMERICAN ARTISAN in your reply—Thank you!

Sell this Automatic Janitor with each Furnace

Many trips to the basement are saved every day by the Full Electric MASTER Heat Regulator. Everyone wants this great convenience, uniform heat and saving of fuel. The time to sell it is when you sell the furnace—as well as to your former customers.



Full Electric Model Without Clock Control $55

Full Electric 8-Day Jewelled Clock Model $80

MASTER HEAT REGULATOR

TYPE 22

Acts instantly upon changes of one degree, or less if desired. Nothing to forget. Needs no daily attention. Earns its cost in fuel saving.

These Low Prices Help Sales

Type 22, a Full-Electric regulator with 8-Day Jewelled Clock control. $80. Plain model, full electric same as above, without clock $55. Made by the manufacturers of the MASTER gradual control Heat Regulator.

This equipment brings handsome profits to furnace dealers. Our liberal discounts make that certain. Write today for details.

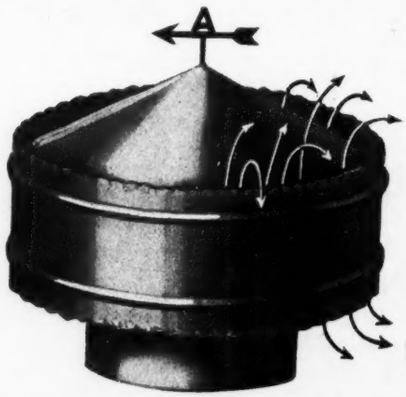
WHITE MFG. CO.

2362 University Ave. **St. Paul, Minn.**

Aeropull

STORM BAND

VENTILATOR



THE design of the Aeropull Ventilator makes it free from choking down tendencies. It is designed especially for fan work.

The storm band on the Aeropull is 50% greater than standard and the free exhaust is 50% greater also.

It is a more durable, larger and more efficient ventilator at a lower price

WRITE FOR CATALOG AND PRICES TODAY

PAUL R. JORDAN & CO.

630 South Delaware St. **Indianapolis, Ind.**

TRADE

BB

MARK

"SHUR-LOCK" CONDUCTOR PIPE
"E-Z FIT" EAVES TROUGH
EAVES TROUGH HANGERS
"QUAKER CITY" MITERS
END PIECES, CAPS AND OUTLETS
PIPE HOOKS
PIPE FASTENERS
CONDUCTOR HEADS
ORNAMENTAL CONDUCTOR STRAPS AND ENDS

Look for B. B. on Every Piece—it is a Mark of Quality

SOLD BY LEADING JOBBERS EVERYWHERE

BERGER BROS. CO.

229 to 237 Arch St. **Philadelphia, Pa**

Western Office: 140 So. Dearborn St., Chicago

WHITNEY Lever PUNCHES

Good Tools Are Time Savers

No. 4—ONE HAND TINNER'S PUNCH

Capacity, ¼ inch hole through 16 Gauge. Punches 1/16 inch to 9/32" inch by 1/64. Punch and Die stay in perfect alignment because side plates carry the strain. Has adjustable gauge to regulate holes from edge.

No. 2 PUNCH—*the Leader for 20 years*

This is the preferred punch for quick and accurate punching. Depth of throat, 1 11/16 inches. Capacity, 5/16 inch through ¾ inch iron or equivalent. Extra punches and dies in sizes, ⅛ to ½ inch by 1/64 inch.

SPECIAL CLOSE CORNER PUNCH No. 2

The No. 2 is also specially machined to make it a Close Corner Punch. It will punch within ½ inch of the inside corner of angle iron. Extra punches and dies ⅛ to 9/32 inch. Also made in 64ths special.

W. A. WHITNEY MFG. COMPANY

636 Race Street -:- -:- Rockford, Ill.

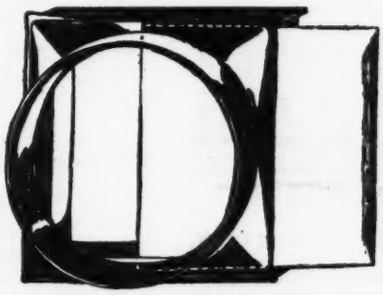
Order from Your Jobber — *Look for This Trade Mark*

TRADE MARK REGISTERED

The Choice of OVER 40,000 Satisfied Users

Make an *extra profit* on every New and Old smoke pipe installation

"NO-DAMP"



It's a

1 Draft Control
2 Thimble
3 Protection Against Moisture
4 Pipe Saver

It sells on sight—It's easy to install

THE four-in-one purpose of the "No Damp" makes sales easy. "No-Damp" is made of cast iron. Every smoke pipe needs one no matter what kind of heat is used.

The slide acts as a damper—it keeps excessive moisture or water from reaching the smoke pipe or furnace in spring and summer. It eliminates necessity of taking down smoke pipe in spring—it makes a neat and substantial thimble if pipe is taken down.

Be the one in your territory to sell "No-Damp"—write today for circulars and prices.

EISSLER HARDWARE

129-131 FIFTH STREET AURORA, ILL.

PEXTO Bar Folders are made in sizes 20, 30, 36 and 42 inches

The "ARROW"

YOU expect speed and accuracy in Bar Folding machine operation. Exceed your expectations by using a Pexto "Arrow"—a machine built with these features in view.

This improved Bar Folder is no longer an experiment. Universally in use, it is winning the approval of practical users everywhere.

The proof will be found in an actual working test followed by a careful inspection of this high grade machine. Pexto Arrow Bar Folders will not disappoint you.

Guide No. 25A—Hand Machines and Tools for Sheet Metal Work.

Catalog No. 25A—Hand and Power Machines and Tools for Sheet Metal Work.

Power Squaring Shears, Power Presses and Power Double Seaming Machines are offered in individual bulletins. Write for those you are interested in.

PEXTO

THE PECK, STOW & WILCOX CO.

Southington, Conn., U. S. A.

~ MARKET QUOTATIONS ~

AMERICAN ARTISAN is the only publication quoting Prices on Metals, Sheet Metal Equipment and Supplies, Warm Air Heating Supplies and Accessories, corrected bi-weekly. These quotations are not guaranteed but are obtained from reliable sources and reflect nation-wide market conditions at the time of going to press.

NOTE—These prices are Chicago Warehouse Prices to which must be added territory differentials

METALS

PIG IRON

Chicago Fdy., No. 2	$17.50
Southern Fdy. No. 2	$17.51 to 17.51
Lake Superior Charcoal	27.04
Malleable	17.50

FIRST QUALITY BRIGHT CHARCOAL TIN PLATES

IC	20x28 112 sheets	$22.50
IX	20x28	25.50
IXX	20x28 56 sheets	14.50
IXXX	20x28	15.50
IXXXX	20x28	17.00

TERNE PLATES

	Per Box
IC 20x28, 40-lb. 112 sheets	$24.00
IX 20x28, 40-lb. 112 sheets	26.50
IC 20x28, 25-lb. 112 sheets	20.50
IX 20x28, 25-lb. 112 sheets	23.50
IC 20x28, 20-lb. 112 sheets	19.00
IV 20x28, 20-lb. 112 sheets	22.00

"ARMCO" INGOT IRON PLATES

No. 8 ga.—110 lbs.	$4.15
3/16 in.—100 lbs.	4.05
¼ in.—100 lbs.	3.85

COKE PLATES

Cokes, 80 lbs., base, 20x28	$12.00
Cokes, 90 lbs., base, 20x28	12.20
Cokes, 100 lbs., base, 20x28	13.75
Cokes, 107 lbs., base, IC, 20x28	12.75
Cokes, 135 lbs., base, IX, 20x28	14.75
Cokes, 155 lbs., base, 2X, 56 sheets	8.50
Cokes, 175 lbs., base, 3X, 56 sheets	9.35
Cokes, 195 lbs., base, 4X, 56 sheets	10.25

BLUE ANNEALED SHEETS

Base 10 ga. per 100 lbs.	$3.35
"Armco" 10 ga. per 100 lbs.	4.15

ONE PASS COLD ROLLED BLACK

No. 18-20 per 100 lbs.	$3.75
No. 22 per 100 lbs.	3.70
No. 24 per 100 lbs.	3.75
No. 26 per 100 lbs.	3.85
No. 27 per 100 lbs.	3.90
No. 28 per 100 lbs.	4.00

GALVANIZED

No. 16 per 100 lbs.	$3.85
No. 18 per 100 lbs.	3.95
No. 20 per 100 lbs.	4.15
No. 22 per 100 lbs.	4.20
(Standard differentials on extras to apply)	
No. 24 per 100 lbs.	$4.35
No. 26 per 100 lbs.	4.60
No. 27 per 100 lbs.	4.70
No. 28 per 100 lbs.	4.85
"Armco" 24 per 100 lbs.	5.95

BAR SOLDER

Warranted 50-50 per 100 lbs.	$19.00
45-55 per 100 lbs.	17.50
48-52 per 100 lbs.	18.00
Plumbers' per 100 lbs.	15.50

ZINC

In Slabs	$5.00

SHEET ZINC

Cask Lots (600 lbs.)	$12.00
Sheet Lots (100 lbs.)	13.00

BRASS

Sheets, Chicago base	18 ⅝ c
Tubing, brazed, Chicago base	26 ½ c
Tubing, seamless, Chicago base	23 ½ c
Wire, Chicago base	19 ⅛ c
Rods, Chicago base	16 ⅞ c

COPPER

Sheets, Chicago base	21 ¾ c
Tubing, seamless, Chicago base	24 ½ c
Wire, plain rd., 8 B. & S. Ga. and heavier	14 ⅛ c

LEAD

American Pig	$6.00
Bar	7.50

TIN

Bar Tin per 100 lbs.	$32.00
Pig Tin per 100 lbs.	31.00

SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES

ASBESTOS

Paper up to 1/16	6c per lb.
Roll board	7 ½ c per lb.
Mill board 3/32 to ⅛	7 ½ c per lb.
Corrugated paper (250 sq. ft. per roll)	$6.00 per roll

ASBESTOS SEGMENTS

8 in. per 100 sets	$7.30
9 in. per 100 sets	8.30
10 in. per 100 sets	9.30
12 in. per 100 sets	10.50

CEMENT FURNACE

5-lb. cans, net	$0.40
10-lb. cans, net	0.80
25-lb. cans, net	2.00
Per 100 lbs.	7.50

CLIPS

Damper

No-Rvet Steel, with tail pieces, per gross	$9.50
Rivet Steel, with tail pieces, per gross	7.50
Tail pieces, per gross	2.40

COPPER FOOTING

Copper Footing	41 %

CORNICE BRAKES

Chicago Steel Bending

Nos. 1 to 6B	Net

CUT-OFFS

Cal., plain, round or cor. rd.	
26 gauge	30 %
28 gauge	35 %

DAMPERS

Yankee Warm Air

7 inch, doz.	$1.60
8 inch, doz.	2.20
9 inch, doz.	2.60
10 inch, doz.	2.80
12 inch, doz.	3.50
14 inch, doz.	5.00

EAVES TROUGH

Galv. Crimpedge, crated	75-15 %
Zinc	60 %

ELBOWS

Conductor Pipe

Galv. plain or corrugated, round flat Crimp.

28 gauge	60-10 %
26 gauge	50 %
24 gauge	15 %

Galv. Terne Steel

Plain Rd. and Rd. Corr.

28 gauge	60-10 %
26 gauge	50 %
24 gauge	15 %

Square Corrugated

28 gauge	55 %
26 gauge	40 %

Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated.

Not nested	70 & 5 %
Nested solid	70 & 5 %

Sq. Corr., A. & B. & Octagon

28 gauge	55 %
26 gauge	40 %

Portico

1, 1¼, 1½ inch	45 %

Copper

16 oz. all designs	50 %

Zinc

All styles	60 %

ELBOWS—Stove Pipe

1-piece Corrugated, Uniform Blue

No. 28 Gauge.	Doz.
5 inch	$1.15
6 inch	1.25
7 inch	1.75

Adjustable—Uniform Blue

No. 28 Gauge, Uniform Blue.

5 inch	$1.60
6 inch	1.75
7 inch	2.10

WOOD FACES—60 % off list.

FIRE POTS

	Each
No. 02 Gasoline Torch, 1 qt.	$5.13
No. 9250, Kerosene, or Gasoline Torch, 1 qt.	6.50
No. 10 Tinner's Furnace Square tank, 1 gal.	11.20
No. 15 Tinner's Furnace Round tank, 1 gal.	10.70
No. 21 Gas Soldering Furnace	8.00
No. 110 Automatic Gas Soldering Furnace	10.50

GLASS

Single and Double Strength, A, all brackets	85 %
Single and Double Strength, B, all brackets	87 %

HANGERS

Conductor Pipe

Milcor Perfection Wire	25 %
Milcor Triplex Wire	10 %

Eaves Trough

Steel (galv. after forming) from list	45 %
Selflock E. T. Wire, List	10 %

HOOKS

Conductor

"Direct Drive" Wrought Iron for wood or brick 15 %

MITRES

Galvanized Steel Mitres

28 gauge	70
26 gauge	60-20

PASTE

Asbestos Dry Paste

200-lb. barrel	$15.00
100-lb. barrel	7.75
50-lb. pail	4.50
25-lb. pail	2.50
10-lb. bag	1.20
5-lb. bag	0.60

PIPE

Galvanized

Crated and nested (all gauges)	75-12½ %
Crated and not nested (all gauges)	75-7½ %

Furnace Pipe

Double Wall Pipe and Fittings	60 %
Single Wall Pipe, Round Galvanized Pipe	60 %
Galvanized and Tin Fittings	60 %

Lead

Per 100 lbs.	$12.50

Stove Pipe
"Milcor" "Titelock" Uniform Blue Stove

28 gauge, 5 inch U. C. nested	$11.00
28 gauge, 6 inch U. C. nested	12.00
28 gauge, 7 inch U. C. nested	14.00
30 gauge, 5 inch U. C. nested	10.25
30 gauge, 6 inch U. C. nested	11.00
30 gauge, 7 inch U. C. nested	13.00

T-Joint Made Up

6 inch, 28 ga. per doz.	$3.40

REGISTERS AND FACES

Floor Registers

Except Cast Iron	40 & 10 %
Cast Iron	20 %

Baseboard

2-Piece	40 & 10 %
1-Piece	40-10 & 20 %

Adjustable Ventilators

Adjustable Cold Air Faces	40 & 10 %
Adjustable Ventilators	40 & 10 %

RIDGE ROLL

Galv. Plain Ridge Roll, b'dld	75-15-5 %
Galv., Plain Ridge Roll, crated	75-15 %

SCREWS

Sheet Metal

7, ½ x ⅛, per gross	$0.52
No. 10, ¾ x 3/16, per gross	0.68
No. 14, ⅞ x ¼, per gross	0.83

SHEARS, TINNERS' AND MACHINISTS'

Viking	$22.00

Lennox Throatless

No. 18	35 %
Shear blades	10 %
(f. o. b. Marshalltown, Iowa.)	

SHOES

Galv. 28 Gauge, Plain or Corrugated, round flat crimp	60 %
26 gauge, round flat crimp	50 %
24 gauge, round flat crimp	15 %

SNIPS

Tinners'	Net

VENTILATORS

Standard	30 to 40 %
Milcor	Net

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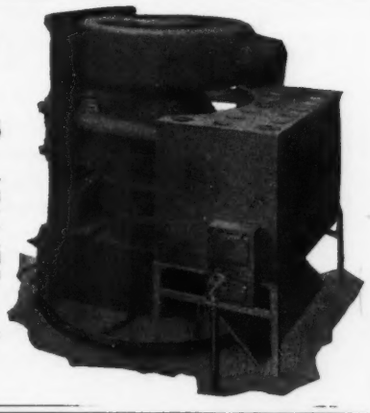

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American Fdy. & Furnace Co., Bloomington, Ill.
Meyer & Bro. Co., F., Peoria, Ill.
Warm Air Furnace Fan Co., Cleveland, Ohio
Watt Mfg. Co., Sterling, Ill.

Air Washers
A. Gehri & Co., Tacoma, Wash.
Watt Mfg. Co., Sterling, Ill.

Aluminum Sheets
J. M. & L. A. Osborn Co., Cleveland, Ohio

Asbestos—Liquid
Technical Products Co., Pittsburgh, Pa.

Bearings
Fafnir Bearing Co., New Britain, Conn.

Blast Gates
Berger Bros. Co., Philadelphia, Pa.

Blower Bearings
Fafnir Bearing Co., New Britain, Conn.

Blowers—Furnace
American Fdy. & Furnace Co., Bloomington, Ill.
American Machine Products Co., Marshalltown, Iowa
A. Gehri & Co., Tacoma, Wash.
Brundage Co., Kalamazoo, Mich.
Lakeside Co., Hermansville, Mich.
Warm Air Furnace Fan Co., Cleveland, Ohio
Watt Mfg. Co., Sterling, Ill.

Bolts—Stove
Lamson & Sessions Co., Cleveland, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Brakes—Bending
Dreis & Krump Mfg. Co., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y St. L., Det., Cleve.
Peck, Stow & Wilcox Co., Southington, Conn.

Brakes—Cornice
Dreis & Krump Mfg. Co., Chicago, Ill.

Brass and Copper
American Brass Co., Waterbury, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
Copper & Brass Research Association, New York, N. Y.
Revere Copper & Brass, Rome, N. Y.

Bronze
Revere Copper & Brass, Rome, N. Y.

Cans—Garbage
Diener Mfg. Co., G. W., Chicago, Ill.
Osborn Co., The J. M. & L. A., Cleveland, Ohio

Castings—Malleable
Fanner Mfg. Co., Cleveland, Ohio

Ceilings—Metal
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Chaplets
Fanner Mfg. Co., Cleveland, Ohio

Cleaners—Vacuum
Brillion Furnace Co., Brillion, Wis.
National Super Service Co., Toledo, Ohio

Copper
American Brass Co., Waterbury, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
Revere Copper & Brass, Rome, N. Y.
Rockford Sheet Steel Co., Rockford, Ill.

Cornices
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Cut-offs—Rain Water
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Dampers—Quadrants—Accessories
Aeolus Dickinson Chicago, Ill.
Hart & Cooley Co., Holland, Mich.
Howes Co., S. M., Boston, Mass.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Parker-Kalon Corp., New York, N. Y.

Dampproofings
Lastik Products Corp., Pittsburgh, Pa.

Damper Regulators
Sheer Co., H. M., Quincy, Ill.

Diffuser—Air Duct
Aeolus Dickinson Chicago, Ill.

Drills—Electric
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
J. M. & L. A. Osborn Co., Cleveland, Ohio
The Stanley Electric Tool Co., New Britain, Conn.

Drive Screws—Hardened Metallic
Parker-Kalon Corp., 190 Varick St., New York

Dust Eliminator
Dustless Ash Co., Muskegon, Mich.

Eaves Trough
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Rockford Sheet Steel Co., Rockford, Ill.

Elbows and Shoes—Conductor
Apex Gutter Hanger Corp., New York, N. Y.
Barnes Metal Products Co., Chicago, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Rockford Sheet Steel Co., Rockford, Ill.

Fittings—Conductor
Barnes Metal Products Co., Chicago, Ill.
Braden Mfg. Co., Terre Haute, Ind.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Fluxes—Soldering
Kester Soldering Co., Chicago, Ill.

Furnace Cement
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Lastik Products Corp., Pittsburgh, Pa.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Technical Products Co., Pittsburgh, Pa.

Furnace Chain
Hart & Cooley Co., Holland, Mich.

Furnace Cleaners—Suction
Brillion Furnace Co., Brillion, Wis.
National Super Service Co., Toledo, Ohio

Furnace Fans
A-C Mfg. Co., Pontiac, Ill.
American Fdy. & Furnace Co., Bloomington, Ill.
Brundage Co., The, Kalamazoo, Mich.
Lakeside Co., Hermansville, Mich.
Robinson Co., A. H Massillon, Ohio
Warm Air Furnace Fan Co., Cleveland, Ohio
Watt Mfg. Co., Sterling, Ill.

Furnace Filters
Warm Air Furnace Fan Co., Cleveland, Ohio

Furnace Paste
Western Mineral Products Co., Omaha, Neb.

Furnace Pokers
Fanner Mfg. Co. Cleveland, Ohio

Furnace Pulleys
Hart & Cooley Co., Holland, Mich.

Furnace Regulators
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Sheer Co., H. M., Quincy, Ill.
Tisch, Inc., Charles, Brooklyn, N. Y.
White Mfg. Co., Minneapolis, Minn.

Furnace Rings
Forest City-Walworth Run Foundries Co., Cleveland, Ohio

Furnace Switch—Automatic
Payne Furnace & Supply Co., Beverly Hills, Cal.

Furnaces—Gas
Calkins & Pearce, Columbus, Ohio
Lennox Furnace Co., Marshalltown, Iowa
Mueller Furnace Co., L. J., Milwaukee, Wis.
Payne Furnace & Supply Co., Beverly Hills, Cal.
Robinson Co., A. H., Massillon, Ohio
Rudy Furnace Co., Dowagiac, Mich.
Wise Furnace Co., Akron, Ohio

Furnaces—Oil Burning
Motor Wheel Corp., Heater Div., Lansing, Mich.

Furnaces—Warm Air
Agricola Furnace Co., Gadsden, Ala.
American Fdy. & Furnace Co., Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
The Beckwith Co., Dowagiac, Mich.
Brillion Furnace Co. Brillion, Wis.
Enterprise Boiler & Tank Works, Chicago, Ill.
Farris Furnace Co., Springfield, Ill.
Forest City-Walworth Run Fdy., Cleveland, Ohio
Fox Furnace Co., Elyria, Ohio
Henry Furnace & Fdy. Co., Cleveland, Ohio
Langenberg Mfg. Co., St. Louis, Mo.
London Furnace Co., London, Ohio
Lennox Furnace Co., Marshalltown, Iowa
Syracuse, N. Y.
May Fiebeger Furnace Co., Newark, Ohio
Meyer Furnace Co., The., Peoria, Ill.
Midland Furnace Co., Columbus, Ohio
Motor Wheel Corp., Heater Div., Lansing, Mich.
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Payne Furnace & Supply Co., Beverly Hills, Cal.
Premier Warm Air Heater Co., Dowagiac, Mich.
Peerless Foundry Co., Indianapolis, Ind.
Rybolt Heater Co., Ashland, Ohio
Rudy Furnace Co., Dowagiac, Mich.
Standard Fdy. & Furnace Co., De Kalb, Ill.
Success Heater Mfg. Co., Des Moines, Iowa
Schwab Furnace & Mfg. Co., Milwaukee, Wis.
Waterman-Waterbury Co., Minneapolis, Minn.
Western Steel Products Co., Duluth, Minn.
Wise Furnace Co., Akron, Ohio

Gas Burning Attachments
Calkins & Pearce, Columbus, Ohio
Munkel-Rippel Heating Co., Columbus, Ohio

Grilles
Auer Register Co., Cleveland, Ohio
Harrington & King Perforating Co., Chicago, Ill.
Hart & Cooley Co., New Britain, Conn.
Tuttle & Bailey Mfg. Co., Chicago, Ill.

Guards—Machine and Belt
Harrington & King Perforating Co., Chicago, Ill.

Handles—Boiler
Berger Bros. Co., Philadelphia, Pa.

Handles—Soldering Iron
Hyro Mfg. Co., New York, N. Y.

Handles—Furnace Door
Fanner Mfg. Co., Cleveland, Ohio

Hangers—Eaves Trough
Apex Gutter Hanger Corp., New York, N. Y.
Berger Bros. Co., Philadelphia, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Heat Regulation Systems
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Tisch, Inc., Charles, Brooklyn, N. Y.
Sheer Co., H. M., Quincy, Ill.
White Mfg. Co., Minneapolis, Minn.

Heaters—Cabinet
Fox Furnace Co., Elyria, Ohio
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Motor Wheel Corp., Heater Division, Lansing, Mich.
Payne Furnace & Supply Co., Beverly Hills, Cal.
Waterman-Waterbury Co., Minneapolis, Minn.

Heaters—School Room
Meyer Furnace Co., The, Peoria, Ill.
Western Steel Products Co., Duluth, Minn.
Waterman-Waterbury Co., Minneapolis, Minn.

Humidifiers
Automatic Humidifier Co., Cedar Falls, Iowa
Diener Mfg. Co., G. W., Chicago, Ill.
Meyer & Bro. Co., F., Peoria, Ill.
Sheer Co., H. M., Quincy Ill.
J. L. Skuttle Co., Dowagiac, Mich.

Lath—Expanding Metal
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Machines—Crimping
Bertsch & Co., Cambridge City, Ind.

Machinery—Culvert
Bertsch & Co., Cambridge City, Ind.
Interstate Machinery Co., Chicago, Ill.

Machines—Tinsmith's
Bertsch & Co., Cambridge City, Ind.
Dreis & Krump Mfg. Co., Chicago, Ill.
Hyro Mfg. Co., New York, N. Y.
Interstate Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
The Stanley Electric Tool Co., New Britain, Conn.
Whitney Mfg. Co., W. A., Rockford, Ill

Metals—Perforated
Harrington & King Perforating Co., Chicago, Ill

Miters—Eaves Trough
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Braden Mfg. Co., Terre Haute, Ind.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Nails—Copper and Brass
Chase Brass & Copper Co., Waterbury, Conn.
Revere Copper & Brass, Rome, N. Y.

(Continued on page 62)

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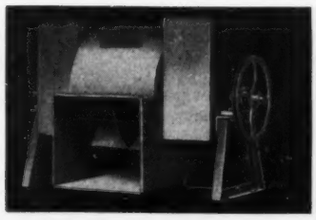

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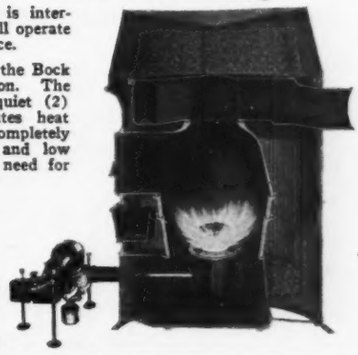

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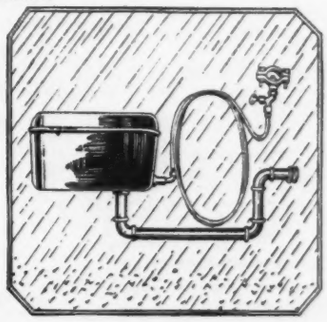

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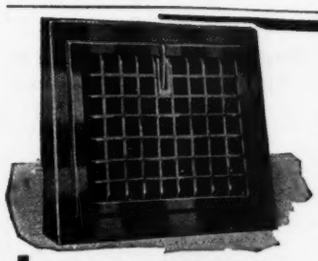

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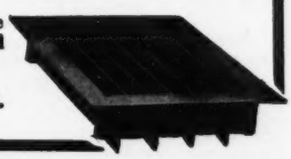

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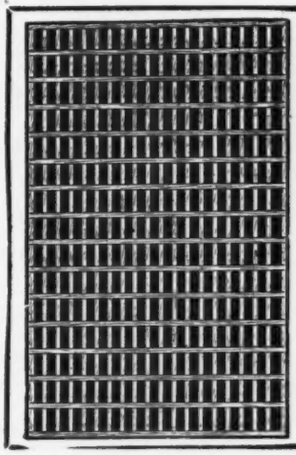

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Plymouth Indiana

Say you saw it in AMERICAN ARTISAN—Thank you!

BUYERS' DIRECTORY

(Continued from page 60)

Nails—Hardened Masonry
Parker-Kalon Corp., New York, N. Y.

Oil Burners
Berryman System of Oil Heating, Inc., Chicago, Ill.
Bettendorf Mfg. Co., Bettendorf, Iowa
Bock Oil Burner Co., Madison, Wis.
Mellvaine Burner Corp., Evanston, Ill.
Silent Automatic Corp., Detroit, Mich.

Paint
Connors Paint Mfg. Co., Wm., Troy, N. Y.

Perforated Metals
Harrington & King Perforating Co., Chicago, Ill.

Pipe and Fittings—Furnace
Henry Furnace & Fdy. Co., Cleveland, Ohio
Lamneck & Co., W. E., Columbus, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Peerless Foundry Co., Indianapolis, Ind.

Pipe and Fittings—Stove
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Pipe—Conductor
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Punches
Bertsch & Co., Cambridge City, Ind.
Hyro Mfg. Co., New York
Interstate Machinery Co., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
W. A. Whitney Mfg. Co., Rockford, Ill.

Punches—Combination Bench and Hand
Hyro Mfg. Co., New York, N. Y.

Punches—Hand
Hyro Mfg. Co., New York, N. Y.
W. A. Whitney Mfg. Co., Rockford, Ill.

Putty—Stove
Connors Paint Mfg. Co., Wm., Troy, N. Y.

Radiator Cabinets
Hart & Cooley Co., Holland, Mich.

Ranges—Gas
The Beckwith Co., Dowagiac, Mich.
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.

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Lamneck & Co., W. E., Columbus, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Mueller Furnace Co., L. J., Milwaukee, Wis.
Rock Island Register Co., Rock Island, Ill.
Symonds Register Co., St. Louis, Mo.
Tuttle & Bailey Mfg. Co., Chicago, Ill.
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General Products Corp., Indianapolis, Ind.

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Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

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Lamson & Sessions Co., Cleveland, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Rods—Stove
Lamson & Sessions Co., Cleveland, Ohio

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Interstate Machinery Co., Chicago, Ill.

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Connors Paint Mfg. Co., Wm., Troy, N. Y.
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Inland Steel Co., Chicago, Ill.
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Osborn Co., The J. M. & L. A., Cleveland, Ohio
Ryerson & Sons, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Roofing—Tin
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Taylor Co., N. & G., Philadelphia, Pa.

Rubbish Burners
Hart & Cooley Co., New Britain, Conn.

Schools—Sheet Metal Pattern Drafting
St. Louis Technical Institute, St. Louis, Mo.

Schools—Warm Air Heating
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Screws—Hardened Metallic Drive
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Parker-Kalon Corp., 200 Varick St., New York

Screws—Hardened Self-Tapping, Sheet Metal
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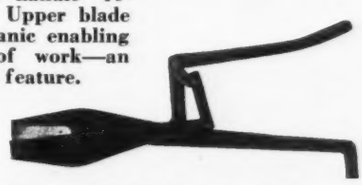

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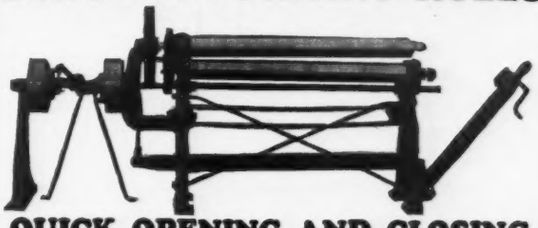

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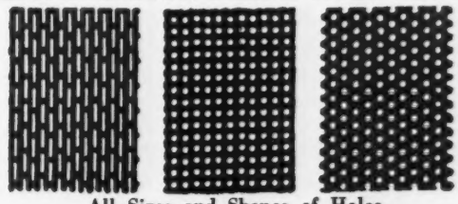

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WANTS AND SALES

Yearly subscribers to the AMERICAN ARTISAN may insert advertisements of not more than fifty words in our Want and Sales Columns WITHOUT CHARGE for three insertions.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired, and must reach our office ten days prior to date of publication. This privilege is not extended to manufacturers or jobbers—or those making a business of buying and selling used machines—employment agencies and brokers.

When sending advertisement state whether your name or blind number is to be used.

SITUATION WANTED

Situation Wanted—Thoroughly experienced sheet metal worker, expert on soda fountain work, having specialized in this type of work for some years. Would be most valuable to shop doing new or repair work on soda fountains, restaurant equipment, range hoods, etc. Have also had thorough experience in general sheet metal jobbing and warm air furnace heating. Especially neat worker, capable, steady, reliable, and sober. Wants steady job and will go anywhere, large or small town. Address F-528, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

This is addressed to a manufacturer who harps on quality furnaces and intelligent installations. If such a manufacturer needs a sales manager or assistant sales manaer, I would like to hear from him. For ten years I helped market a well known furnace. Served in sales promotion and advertising departments, as a salesman, and as branch manager. Thorough investigation as to character and ability invited. Communications strictly confidential. Address A-529, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—Have traveled Wisconsin for prominent furnace company of St. Paul, have had ten years of specialty selling experience. and have worked Minnesota, Wisconsin, North and South Dakota, and Montana territory and have large acquaintance throughout this territory. Can figure house plans for warm air furnace work, and am familiar only with cast furnaces. Married, steady, reliable and sober. Address C-529, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—By good combination mechanic, heating, plumbing and metal. Good salesman; would prefer job in shop when I can be at home part of time. Last 9 years on road installing heating and plumbing. Would like small town in South. Address B-529, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—Will operate branch or work with furnace manufacturer in Sales Department. Have installed furnaces for years. Am now managing local furnace shop. Can give good references of highest quality. What have you to offer? Address Mr. G. Van Horn, 1102 Heston St., Toledo, Ohio. G-529

SITUATION WANTED

Situation Wanted—By sheet metal worker with a good knowledge of pattern drafting. Can work from blue prints. Have had school heating and factory maintenance experience. Know the Standard Code. Am thirty-nine years old and married, sober and steady. Address H-529, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—If you answer this ad you will hear from a man who has had years of experience in the stove and furnace business—inside and outside, from shipping clerk to executive. A responsible position with possibilities is more important than location or large starting salary. Address J-529, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—By first-class sheet metal and ventilation estimator and salesman. Thorough mechanic, pattern cutter and layout man. Employed at present but not satisfied. Would like to make connections with the idea of becoming interested in the business later. Address K-528, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

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Situation Wanted—Want to represent good firms that manufacture a good line of cast furnaces, steel furnaces, furnace fittings, registers, fans, humidifiers, heat regulators, furnace putty, and all tin shop and furnace shop supplies. Address J-528, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—By tinner and furnace man. Can handle anything along these lines. Strictly temperate and reliable. Permanent position desired. Address E-528, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

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Wanted—Sheet Metal Worker experienced in high class manufacturing for foreman in new Kalamein door and sheet metal factory. We are making money, have orders and need a man who will invest three to five thousand dollars. If you have the money, some business experience, and are between 35 and 55 years of age, write for full details. Address Pro Bert Mfg. Co., 2239 Oros Street, Los Angeles, Calif. X-528

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Wanted—Used home study course on Heating Ventilating Engineering at right price. Address K-529, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

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For Sale—Sheet Metal Design and Pattern Drafting Course. Address D-529, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

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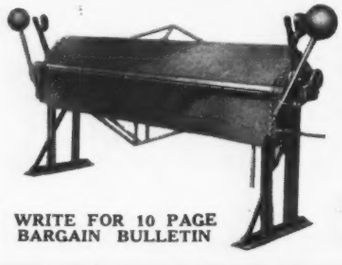

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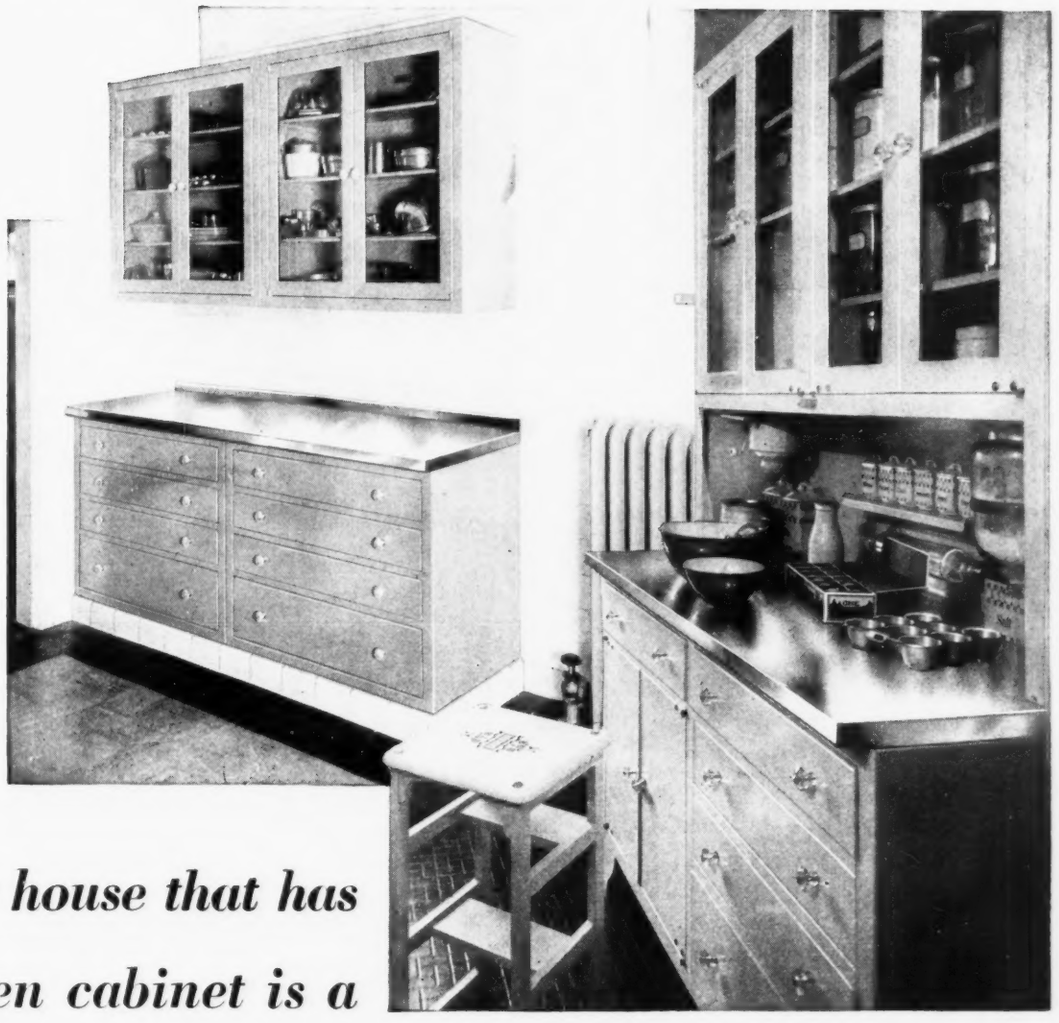
Business in general is starting on its upward swing. Don't wait to see and lose out; but Prepare this Fall, Winter and Spring to open new doors of Opportunity. We have just revised and enlarged our unexcelled Home Study Courses. They are now brand new, giving you 1931 Trade conditions. This is our 21st year in Training Monarchs of the Trade. Let us include YOU in our Student Body this Fall—helping you secure more steady work, better positions and opportunities—that come only through the open door of a Technical Training.

Every interested man should write NOW for his copy of our new Directory; it is free to ambitious men anxious for Advancement. Write today. Check your Course.

- ☐ Sheet Metal Design and Pattern Drafting.
- ☐ Specialized Short Sheet Metal Courses.
- ☐ Heating Ventilating Engineering.
- ☐ Special Warm Air and Forced Air Heating.
- ☐ Air Conditioning for Fan H. & V. Eng.
- ☐ Contracting and Estimating.

THE ST. LOUIS TECHNICAL INSTITUTE 4543 CLAYTON AVE. ST. LOUIS, MO.



Every house that has a kitchen cabinet is a Prospect for a MONEL METAL *cabinet top!*

IT'S so easy to make home owners see the advantages of Monel Metal cabinet tops that no enterprising metal contractor can afford to pass up the opportunity of getting this profitable business.

Monel Metal gives you selling points galore. First of all, it is beautiful in appearance. The crisp, silvery lustre of Monel Metal harmonizes perfectly with any scheme of kitchen decoration. And this modern attractiveness is the outward indication of the presence of practical properties which bring joy to the heart of every hard-working housewife!

Monel Metal can never rust. It defies the corrosive attacks of food juices and cleaning compounds. Smooth as glass, it is easy to clean and keep clean. Its sterling-like beauty will last a lifetime, for Monel Metal is strong as steel, with no coating or plating to chip, crack or wear off.

Monel Metal cabinet tops can be made easily, and sold at attractive prices for such a high quality product. And remember—national advertising of Monel Metal is making it easier for you to get this business.

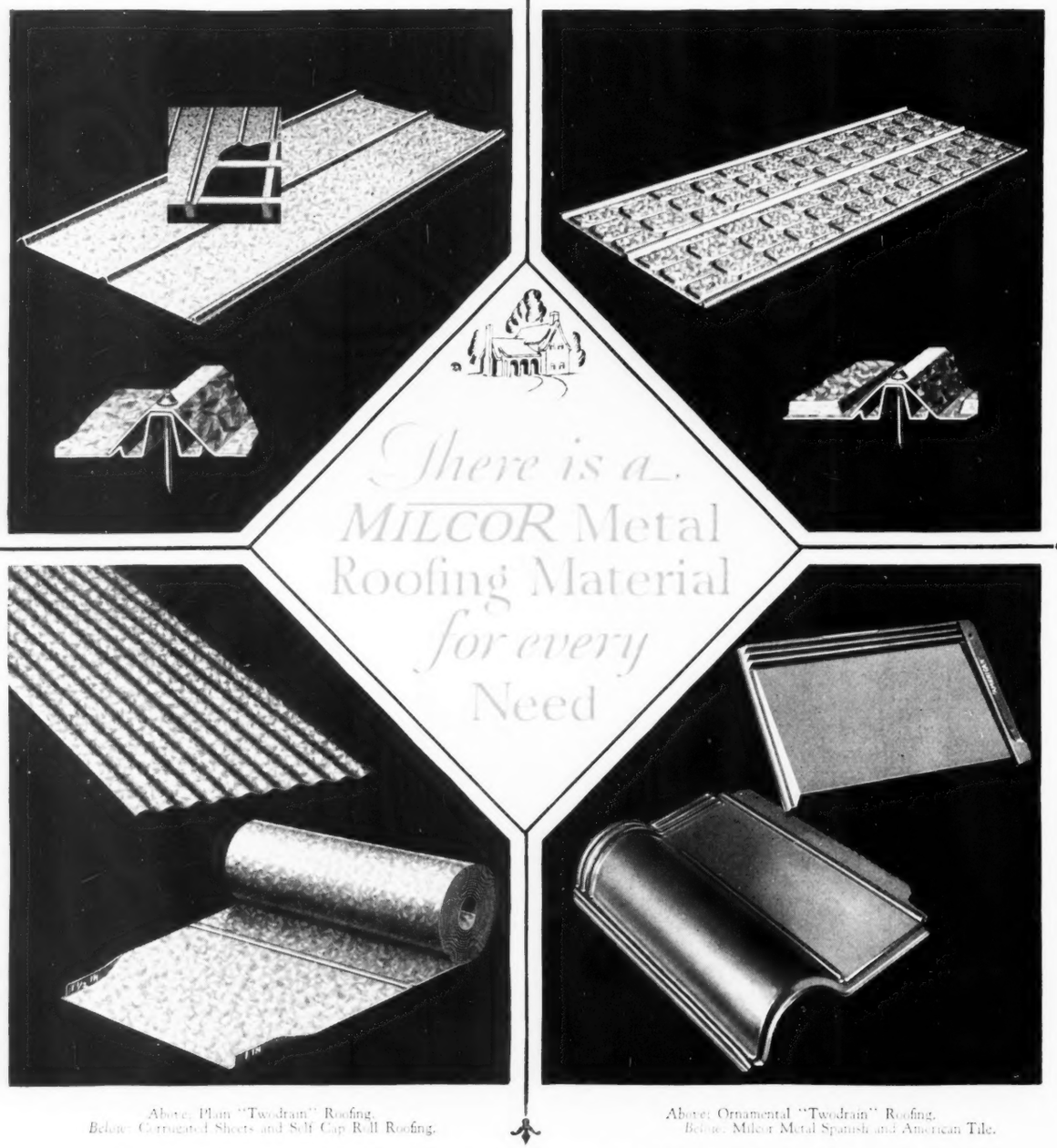
Write for Monel Metal selling helps

MONEL METAL

INCO MONEL METAL

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.



Above: Plain "Twodrain" Roofing.
Below: Corrugated Sheets and Self Cap Roll Roofing.

Above: Ornamental "Twodrain" Roofing.
Below: Milcor Metal Spanish and American Tile.

THE *Milcor* line of metal roofing material represents the finest standard of quality and manufacture. In addition to the more common forms of materials such as Corrugated Sheets . . Self Cap Roll Roofing . . Standing Seam Roofing and many others, *Milcor* offers two outstanding favorites in "Twodrain" Channel Roofing and *Milcor* Metal tile.

These fine roofing materials have earned the confidence of builders everywhere. "Twodrain" as the name implies, is doubly protected against leakage by its two drain channels. It is made in both plain and ornamental designs. *Milcor* Metal Tile has the famous "Tite-Lock" edge.

A "same-day" shipment service is available on all *Milcor* products. Write to the nearest branch or sales office for a copy of the "*Milcor* Sheet Metal Handbook".

MILCOR STEEL COMPANY (formerly Milwaukee Corrugating Co., Milwaukee, Wisconsin and The Eller Mfg. Co., Canton, Ohio)

Main Offices: **1417 Burnham Street, Milwaukee, Wis.**

Milwaukee, Wis. Canton, Ohio Chicago, Ill. Kansas City, Mo. La Crosse, Wis.

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MILCOR PRODUCTS